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January/February 1974, Vol. 5, No. 1

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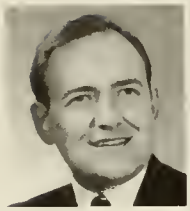

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the cover

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ASHTON S

a livable environment for WILDLIFE is a quality environment for MAN

The 1974 session of the Montana Legislature will consider a variety of legislation held over from the 1973 session. One of the more important bills for sportsmen is SB 418 which suspends the status of the Sun River Game Preserve (as a preserve) for a three-year trial period.

During the 1973 session, this bill was assigned to the Senate Fish and Game Committee which subsequently considered it during the interim period. As part of their consideration, committee members attended several department and Forest Service information meetings last summer and toured the Preserve by air to get a firsthand look at the area, its boundaries and physical characteristics.

For many years, this department supported attempts to abolish the Sun River Game Preserve. Space does not allow a detailed summary of our reasons, but for those who would like this information and the environmental impact statement, drop us a line. Very briefly, these reasons relate to an inability on our part to successfully manage elk in and around a 200,000-acre game Preserve—almost entirely included in designated wilderness areas.

But let's take a look at several matters of concern to those who question abolition of the Preserve. People have asked various questions about how we intend to manage hunting if the Preserve is opened. As a result, game management personnel have recommended specific rules and regulations. For instance, some feel that by opening the Preserve to hunting, we'll endanger the goat and grizzly bear populations which reside within its boundaries. Actually, the department recommends hunting for only deer and elk within the Preserve's boundaries.

For deer, the department recommends a one-year limit and a season that runs concurrently with the statewide general big game hunting season. This type of season is recommended for all three years of the trial period.

For elk, recommendations call for only an antlered bull season in 1974, the first year of the three-year trial. This should offset any headlong "rush" by hunters to a "new" area, as some people believe will happen. The second year of the trial period, recommendations again call for general antlered bull hunting, and also an either sex season during the last two weeks of the general season. The either sex kill will be counted in the quota which would normally be set in the Sun River area to maintain elk numbers at levels compatible with the carrying capacity of the range. The purpose of the short either sex elk season during the second year of the trial period is to evaluate the effect of that type of hunting on elk movements and distribution. Cows will have most of two hunting seasons to become wary of hunters in the Preserve area.

For the third year, recommendations will depend on results of the first two hunting seasons. This will give the Fish and Game Commission a chance to establish a season that best answers questions about effects of hunting in the Preserve area.

With these procedures in mind, we hope everyone understands our desire to adequately manage Sun River elk in a way that satisfies our responsibility to people and to the resource. We intend to maintain close liaison with the Forest Service to insure an orderly hunt, protection of habitat and maintenance of the area's wilderness qualities. After the three-year period, if the Montana legislature decides that hunting this area is feasible on a long-term basis, and a bill is passed to allow the Fish and Game Commission to control hunting as the Commission presently does in the rest of the state, hunting seasons will be established that best suit the game species and their habitat conditions.

Our intent is to do that with which you, the Montana citizen/sportsman has charged us—management and perpetuation of state wildlife. We cannot, at present, fulfill this responsibility with the Sun River Game Preserve.

Wes Woodgerd

Wes Woodgerd, Director
Department of Fish and Game

Was your stream gone

A section of the West Gallatin River. F&G photo by Don Bianchi

when you got there?

By Ralph W. Boland

MINE WAS. ON the Clark Fork River, plans for fishing had to be changed because the stream was being temporarily polluted.

On Rock Creek, the beautiful hole was a hole no more. It had been eliminated by rock. Riprap.

On the West Fork of the Bitterroot, reduced flow, caused by an upstream dam, ruined the day's trip.

What about your favorite stream? If you stream fish very often it's a safe bet that at one time or another you made new plans because someone changed the stream—or a section of the stream—you wanted to fish.

Was it polluted or riprapped? Or, was it channelized, saucered out, cleared, cut off, filled or flooded?

Was the overhanging vegetation—where a trout always lingered—still there? Or was the vegetation destroyed by wintering stock along unfenced streams, cleared away for more crop land, gone due to cultivation up to the streambank edge, turned into a lawn of a recreational subdivision, eroded away, sprayed away or constructed away?

Was the velocity and volume of flow so low that unsightly filamentous algae grew on the stream bottom? Was the capability of the stream to produce trout reduced in proportion to the degree of dewatering which occurred?

Or worse, was your stream almost dry or completely dry—like sections of the West Gallatin, Belt Creek, Lolo Creek, Jefferson River, Tenmile Creek, the Bitterroot River, Little Prickly Pear Creek, the Big Hole River or Skalkaho Creek, to name a few recent examples from the past summer.

STREAM MANIPULATION

The point is that *Montana streams are in trouble.* The same streams that brought national attention to the state and account for a large part of Montanans' pride in their state are being destroyed rapidly. Apparently, nothing about a stream is sacred to a developer when he sees the need to manipulate the stream one way or the other for his own profit.

What about the Yellowstone River in eastern Montana? Remember the vigorous newspaper and television campaign by Montana Power Co.? MPC wanted to use a "teaspoon" (8,000 gallons per minute) of the "one cup" of water which represented the low flow of the Yellowstone at Forsyth (375,000 gpm) for its first two power plants at Colstrip. Now plants three and four are in planning stages. MPC has filed on 250 cubic feet per second (112,200 gpm) of Yellowstone River water. This is about one-third of that low flow.

Basin Electric Power Cooperative of Bismarck, N.D. has filed on 50 cfs (22,440 gpm). Intake Water Co., a subsidiary of Tenneco Corp. of Texas has filed on 111.4 cfs (49,996 gpm). Sherman and Stuart Hunt of Dallas, Tex., have filed on 200 cfs (89,760 gpm) to be taken from the river in Rosebud County, for the purpose of "...irrigation of hereinafter described lands... processing of natural resources and reserving the right to *sell* any water herein appropriated...." [emphasis added]. All of this is very recent. It's plainly obvious that the initial "teaspoon" which Montana Power widely advertised will likely be what remains in the Yellowstone—not the amount taken out.

continued

An unauthorized stream channel clearance on the Bitterroot River near Victor, upstream from a bridge. The lower photo is taken downstream from the same bridge at the same time and shows the stream in its unaltered state. F&G photos by Ralph W. Boland

THE STREAM PRESERVATION ACT

Montana has a Stream Preservation Act (SPA), administered by the Department of Fish and Game. The act in its present general form was passed almost unanimously by the 1965 legislature. This was obviously a clear mandate that it was in Montana's best interest to preserve its streams, and equally as obvious that Montana citizens *wanted* their streams preserved. The SPA in its present form, however, does not adequately protect Montana streams from current threats.

In the early 1960s, the most visible destroyers of streams were road builders. Most projects were sponsored by state and county agencies, and the SPA was limited in its jurisdiction to only state or subdivisions of state government. The SPA has enabled the department to work closely with these agencies and to prevent some stream damage or to mitigate stream losses—to the benefit of all Montana citizens.

Such prevention of loss isn't a result of this department's effort only. Cooperation of agencies sponsoring projects is a necessity. Such cooperation has been—and still is—generally good, particularly from the Montana Department of Highways, the major project-sponsoring agency.

It is becoming increasingly obvious to this department, however, that review of state government projects alone will not preserve Montana's important stream resource. Two other segments of our society are busily engaged in alteration of stream channels under various guises—federal agencies and private corporations and individuals.

FEDERAL ALTERATION

Constitutional law prohibits the application of state law to actions of federal agencies. Several of the agencies, however, *do* cooperate voluntarily with provisions of Montana's SPA. Some, such as the Federal Highway Administration, Geological Survey and Forest Service attempt to coordinate projects and frequently modify plans to preserve fish habitat. Others, such as the Soil Conservation Service (while it cooperates to the extent of scheduling field reviews), often fail to modify projects publicly funded by the Agricultural Stabilization & Conservation Service. This results in severe damage to natural trout habitat.

Until the recent demise of the SCS program called REAP (Rural Environmental Assistance Program), riprapping of streambanks was a major cost share program extensively used in some areas of Montana. This department believes riprap will at best only treat the *effect* of poor land use practices on streams. Riprap itself adds a new hazard to the stream. A statement from a floodplain study (K.M. Nolan, "Floodplain Mapping and Planning Report, Bitterroot Valley, Montana"; University of Montana Dept. of Geology, July 1973) illustrates this point: "Streams can also be channelized and riprap emplaced, but with the *probable* result of losing land up- and downstream to subsequent erosion and flooding" [emphasis added].

Natural occurrences can and do initiate some bank erosion. If banks are well vegetated when these events occur, erosion may be entirely prevented or it will not be nearly as severe.

In certain instances, it is necessary to use riprap; this department is not opposed to these *necessary* uses. But riprap should not be used without careful consideration or as a makeshift solution to the basic problem of poor land management.

In fact, a publication recently released by the Council on Environmental Quality ("Report on Channel Modification," by Arthur D. Little, Inc.) includes a section on the availability of nonstructural alternatives with less ecologically damaging options than structural alternatives (such as riprap) for water resource managers. Included in this section is the interesting statement by the authors that, "We find no evidence that the Soil Conservation Service has encouraged, has seriously considered, or has been encouraged or required under law to consider nonstructural options."

Riprap is a "band-aid" approach to streambank erosion control. Changes in land use to *prevent* stream channel damages should perhaps be cost shared so the band-aid would not be necessary in the first place. Cost sharing programs should not be used to repair effects of practices which are unwise in themselves. These programs only tend to perpetuate unwise land use.

Unfortunately, the Department of Fish and Game also sees little evidence that this necessary change in basic land use and stream protection philosophy is actively promoted by the Soil Conservation Service.

PRIVATE ALTERATION

Stream projects by private corporations and individuals *can* be included in the Stream Preservation Act and a proposed amendment to it will do exactly that. This important amendment has been introduced in the legislature and it will be considered during the 1974 session.

Some corporations now comply voluntarily. Mountain Bell Telephone and Burlington Northern consult with the department when stream projects are planned. On the other hand, one of the state giants, the Montana Power Co., has initiated several projects which resulted in water pollution and channel damage without prior notification or apparent attempt to reduce adverse effects. This department indicated its dissatisfaction, but unfortunately, the damage was done.

Although private individuals occasionally request advice to reduce damage on projects involving a stream, activities of this group cause most of the stream habitat destruction. These projects are often ill-advised not only from the standpoint of preventing the destruction of fish

habitat and stream loss, but also from subsequent adverse effects on adjacent stream sections. Damage results not only to land adjacent to the stream on which the project was accomplished, but also on neighboring land both upstream and downstream.

The only practical recourse at present for a landowner who feels his land was damaged because of a neighbor's stream project is through the courts. It is difficult, if not impossible, to prove the cause of damage in court. More important, it is after the fact. The damage has been done and this damage is often irreversible. *It is an absolute necessity that state control of projects sponsored or accomplished by the private sector be gained if Montana is to retain its stream heritage.*

Another important proposed amendment to the SPA is its penalty provision, which the present act does not contain. This would provide for fines and restoration by the project sponsor of stream channels illegally altered, if restoration is deemed beneficial by the Montana Fish and Game Commission. In some circumstances, repairing an illegal channel alteration could cause even more damage and it would not be practical. Both penalty provisions are needed for effective administration of SPA.

DEWATERING STREAMS

More serious than channel or stream habitat destruction is the effect of totally dewatering a stream—at least for the dewatered period and for several months after, depending on the specific circumstances. The effect on the entire fish population and related aquatic animals is also total—total destruction.

The SPA does not now—and would not with pending amendments—in any way control the amount of water diverted from a stream. The department believes,

A bend of the Beaverhead River near Twin Bridges which has been cleared prior to riprapping under the Emergency Flood Repair program. The project was cost shared by the Agricultural Stabilization & Conservation Service. Note remaining roots and vegetation which indicate previous bank stability and good fish habitat. F&G photo

however, that much of the waste of water seeping from the multitude of temporary diversions can be reduced with fewer diversion points and permanent diversion structures. A sincere effort must be made to reduce water waste and destruction of streambeds and banks by temporary diversion structures.

The department also believes that it is time Montanans examine the problem of drying up streams. Environmentalists have been charged with attempts to turn Montana into one large park, which is an obvious exaggeration. It is also an obvious exaggeration to say that Montana should be changed into one large, irrigated hayfield. The point is that every day more and more land is cleared and leveled for irrigated crop production. Most of this water comes from Montana's streams.

Montana still is blessed with diversity and this diversity of geography, scenery, industry, agriculture and recreational use should be preserved.

LOOK AROUND YOU

The photos on these pages were mostly taken in the last year. Alterations of stream channels have unfortunately been a common and accepted practice for several decades. The change in our stream resource has sometimes been subtle and perhaps the extent has largely been unnoticed.

In a 30-mile radius of Helena, for example, how many streams existed as healthy ecological systems when the four Georgians dipped their gold pans into the stream flowing in what is now Last Chance Gulch, the main street of Helena? How much of Tenmile Creek, Canyon Creek, Sevenmile Creek, the two Beaver Creeks, the Little Blackfoot, Little Prickly Pear Creek, the Missouri River or Prickly Pear Creek remain in their original state or are dry at certain times?

What about your area? Look around.

The majority of fishing in the Helena area now occurs on Missouri River Reservoirs—for trout raised in hatcheries. Nothing is unique about this kind of fishing. It can be repeated in most of the 50 states.

We don't propose to stop development. But we do wish to emphasize that Montana is undergoing explosive pressure for several different kinds of development—all of which affect fish, wildlife and recreation, as well as the life style of its citizens. Streams are an important part of this life style. Priorities must be established to protect them before they are destroyed by extensive development. Let's stop the destruction.

ABOUT THE AUTHOR

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We're losing

Streams in Montana are an important part of our heritage. Most people pay little attention to flowing water unless they actually use it for irrigation, navigation and water-based recreation—or the stream floods and causes people problems.

Indians used streams for transportation and established their villages near them long before the first white man entered Montana. The first settlers also used Montana's streams for transportation. Lewis and Clark followed and mapped many rivers and streams of Montana. Stream bottoms were the first place early prospectors searched for that "lure of the West"—gold. Railroad companies pushing West found that the best and cheapest places to lay track were stream valleys. Railroads were soon followed by highways which also utilized the valley bottoms. People settled on or near rivers because of the land's fertility, availability of water, and easy transportation. Towns sprang up all along Montana's rivers and streams.

With all this development and activity in stream valleys, conflicts between people and the river were inevitable. Usually, the stream or river was altered so it didn't conflict with people's use of the land. Before the days of privately used bulldozers and caterpillars, most stream alterations were done by government

Trout populations in three adjacent sections of the Ruby River were studied by the Department of Fish and Game in the summer of 1973. Each of the three sections was altered in varying degrees. The bulldozed section (above left) was 5,100 feet long; 83 per cent of the channel was altered, 58 per cent of the streambank was covered with river gravel picked up from the streambed and 8 per cent of the streambank was riprapped with blanket rock. The natural section (left) was 3,100 feet long; none of the channel and very little of the streambank (less than 4 per cent) was altered. The riprapped section (above) was 2,100 feet long; 52 per cent of the streambank was lined with blanket rock riprap. F&G photos by Norm Peterson

our streams!

By Bill Miller and Norm Peterson

organizations—highway departments, counties, the Soil Conservation Service, Forest Service, Corps of Engineers etc. But within the last 20 years, ownership and use of caterpillars and heavy machinery by private individuals for the altering of streams has increased tremendously throughout the U.S.

SIX STREAMS STUDIED

To what extent are Montana streams being altered and by whom? During the summer of 1973, fisheries biologists from the Montana Department of Fish and Game were asked to answer this question. Sections from six streams—Beaver, Lolo and Rock creeks, and the Big Hole, Jefferson and Ruby rivers—were selected as samples from which to estimate the magnitude of present-day alterations. (See Fig. 1.) These representative streams were chosen because they are located in different parts of the state, they vary in size and each is (or was) a good trout producing stream.

For this study, "altered" means physically changed by man with a bulldozer or some other form of construction equipment.

In 160 miles of stream studied, 24 miles—approximately one-sixth of the channel—were altered with the dragline or bulldozer. Forty-four miles of streambank were lined with streambed gravel pushed up from

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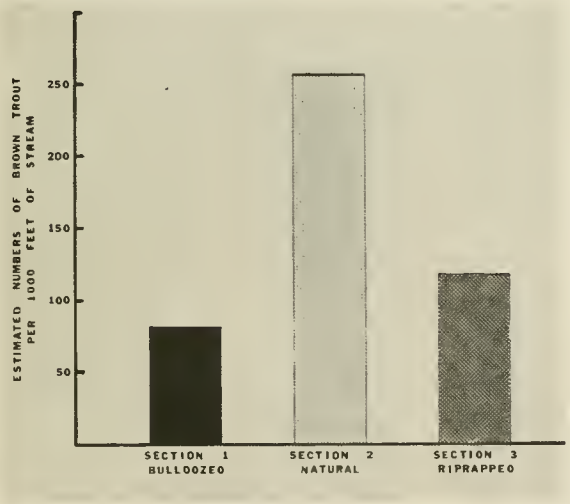


figure 1

Figure 1 (above left) shows that total populations of brown trout in the bulldozed and riprapped sections of the six rivers were reduced by 68 and 54 per cent, respectively, from what could be expected had the sections been left in the natural state. Figure 2 shows that decreases in trout numbers in all sizes and age groups can be expected when a stream is bulldozed, channeled or riprapped.

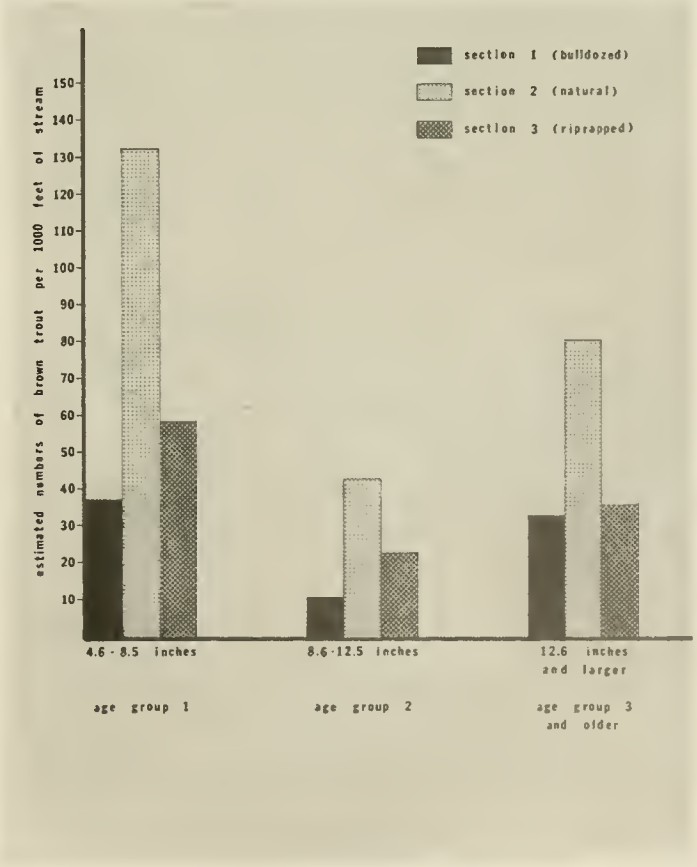


figure 2

the channel, blanket rock riprap, jetties, car bodies, debris or a combination of these. Most of the channel alterations consisted of bulldozing the streambed to deepen the channel, pushing up a temporary irrigation diversion or obtaining streambed material to temporarily "stabilize" the streambank. Much of this stream alteration was quite recent and pointed to the conclusion that alteration of Montana's streams is increasing at an accelerated rate.

LANDOWNERS AND STREAMS

On these six streams, private landowners (for the most part agriculturally oriented) accounted for most channel and streambank alterations. Subdivisions resulted in a surprisingly high percentage of alterations. Industry and federal, state, county and city governments accounted for the rest.

When a private landowner sees the stream eroding the bank on his side of the river, channelizing or riprapping the banks is his immediate solution. When a new subdivision is flooded by high water, channelizing and diking is the immediate solution. In both of these hypothetical cases, the landowner legally can take his bulldozer and heavy machinery into the river and channelize, dike or riprap the stream. Although Montana's Water Quality Act would prohibit sediment pollution, this act could not be enforced until *after* the damage had been done.

How will a river respond to channelization, riprapping and diking?

In 1972, the Montana Department of Fish and Game sponsored a seminar at Montana State University at which a panel of river hydraulic experts presented information explaining river mechanics. (In the following discussion, the authors have incorporated some of the ideas from this seminar.)

STREAM MECHANICS

An untouched stream is in a dynamic state of equilibrium. It is in equilibrium because, over time, it established a pattern or course over which it now flows and it has responded and adjusted to all previous flows. It has a definite sinuousity or meandering pattern, banks are fairly stable and it transports the sediment load supplied by the drainage basin with the least amount of work. Normally, a stream has a pool on one side, a crossing or riffle downstream and then rounds a bend to another pool, riffle etc.

The stream is dynamic because it still carries sediment from the drainage basin, eroding on the outside of bends and depositing sediment on the inside. Therefore, the sinuous pattern of the stream usually shifts down valley. It is dynamic because, over the course of time, it has formed the valley through which it now flows. It formed this valley by vertical and horizontal movement of material and streambed.

A stream develops its sinuous pattern according to its slope, the amount of sediment it carries, the type of material over which it flows and its hydrograph. (A hydrograph is a chart showing the volume of flow with time and the type of peak flows or floods the stream has had.) Change any one of these controlling factors and the stream responds by adjusting the other factors until the flow is balanced again.

STREAM RESPONSE TO ALTERATION

When a stream is channelized and straightened, the slope is increased and the distance the river flows over a certain section of land is shortened. The water velocity increases and the stream has more energy to do work. If the slope is increased above a certain point, the stream ceases to meander and becomes a braided or split flow stream. This occurs because the first response of a stream to an increased gradient is to degrade or erode the bank upstream and deposit or agrade (build up) downstream. The stream builds dunes and bars downstream in the middle of the river to slow the flow down again. While building these bars and dunes, the stream moves large quantities of material so the channel is deepened and widened upstream.

Spring Creek is a good example of a channelized stream. (See July/Aug. 1971 MO.) After channelization, the bank-to-bank measurement changed from 28 feet to 165 feet over a 10-year period. Lolo Creek is another example of a channelized stream. It was also diked in conjunction with a subdivision operation.

During the MSU hydrology seminar, Dr. Morris Skinner from

Channel alteration contributes to a severely braided stream such as this section of the Big Hole River. F&G photo by Bill Miller

After channelization of Spring Creek, the bank-to-bank measurement changed from 28 feet to 165 feet over a 10-year period. Man and his machines have caused 137 feet of streambank loss. These photos illustrate the loss—they were all taken in May of 1970 within two days of each other. F&G photos by Dick Baldes

the Colorado State University Department of Engineering discussed the status of the Big Hole River. Channel activity and bedload activity have created a severely braided stream, he said.

When a stream is riprapped or nailed down at a single point, the part of the stream that is not nailed down usually responds and/or pulls away. The total geometry of the river may change. Thus, one eroding area may be saved only to have the stream change and attack the banks in an entirely different area. Dr. Darryl Simons, dean of CSU's engineering department, discussed riprap and stated: "Many of us think about a river as something much more static than it is, and when we do try to nail it down in one position, especially on a piecemeal basis, we cannot hold it to time *ad infinitum*. And if we put in just pieces and do not totally control it, utimately you are going to lose the pieces and control."

To build dikes along a river, streambed material is usually pushed up, which disrupts the bottom material. Over the years, the river has armor plated the bottom by depositing fine material around the larger cobbles. When the bottom is disrupted by bulldozing a dike, the material is moved and the sediment load increases. By increasing one controlling factor—sediment load—we can expect the river to respond. And the usual response of the stream is to widen where the bottom gravel has been disrupted. This obviously affects fish and their habitat.

HABITAT AND FISH

Rachel Carson once observed that, "*...no organism has survived once its environment was destroyed. Man is the first organism to deliberately destroy its environment.*" However, in destroying his own environment, man is also destroying the environment of other species.

continued

If a man destroys a stream to increase production--or for some other reason--he and the stream will both lose.

Such is the case with trout. Man is now destroying good trout habitat at an alarming rate in Montana.

The department recently initiated a study to determine how alterations affect trout numbers. Trout populations in three adjacent sections of the Ruby River were estimated during the summer of 1973. Each of the three sections underwent varying degrees of alteration.

The channelization in section 1 consisted solely of deepening the channel by pushing the streambed gravel to the sides with a bulldozer. No stream channel straightening was involved.

Section 2 (the natural section) underwent no channel change and very little streambank alteration. This section had good trout habitat and was therefore used as a "control."

All outside bends of section 3 were riprapped with blanket rock. The channel bed was not altered.

The end of the bulldozed section and the start of the natural section was separated by 285 feet. The end of the natural section and the beginning of the riprapped section was separated by 5,200 feet. Since all three sections were separated by relatively small distances, and the water quality and quantity of each were similar, it was assumed that factors affecting trout numbers would be related to degrees and types of stream alterations.

Estimates of the trout populations (brown trout represented 99 per cent of the populations) in each section show that *three times as many trout were present in the natural section as in the bulldozed section.* Surprisingly, the riprapped section—where the only alteration was the lining of outside bends with blanket rock—contained only 46 per cent of the population of the natural section. This disproved what many fishermen previously believed—that riprap provided better habitat than nature.

Another significant conclusion was that trout of all ages and sizes were adversely affected in both bulldozed and riprapped sections.

SOLUTIONS TO STREAM DESTRUCTION

The best solution to the problem of accelerated stream destruction would be to eliminate *all* unnatural activities on the floodplain. In reality, though, this will probably never happen. Therefore, an *acceptable solution* must be sought. A multidisciplinary approach to floodplain management should be implemented. Under this method, landowners and various agencies can pool resources to everyone's benefit.

Specifically, consolidating irrigation ditches, building "permanent" irrigation diversions in "stabilized" areas (such as near bridges), fencing streambanks to protect streamside vegetation and abolishing channelization are a few of the methods that work—to the advantage of streams, trout and man. If a man destroys a stream to increase production—or for some other reason—he and the stream will *both* lose.

The Montana Department of Fish and Game concedes that certain floodplain properties such as buldings, bridges and irrigation structures sometimes need protection with riprap and dikes. But the department disapproves the indiscriminate use of these protective methods because they destroy trout habitat. Destroying a trout's life support system means a decrease in trout numbers. This will mean that Montana sportsmen will have to settle for fewer trout in streams.

By decreasing trout numbers, the landowner is also losing the dollar and aesthetic value of his land. If he destroys the environment around him in order to make a "little extra," he may at the same time destroy that part of nature that he enjoys most. Therefore, *short-term* vs. *long-term* gains should be considered by those who strive to alter nature.

Any landowner on a floodplain has an immediate effect upon the stream—good or harmful—depending on his ethical sensitivity. Since activities of an individual are not covered under the existing Stream Preservation Act, it is not legally wrong for private landowners to alter channels, dry up streams, kill fish and other aquatic life and destroy the enjoyment of countless future generations. We must now ask, even though it is not illegal to destroy this part of our environment, *is it not morally wrong?*

Bill Miller

ABOUT THE AUTHORS

Bill Miller and Norm Peterson are fisheries management biologists for the department in Deer Lodge and Dillon, respectively. Miller holds B.S. and M.S. degrees in fishery science from Colorado State University, Fort Collins, and a Ph.D. in that field from the University of Idaho, Moscow. Peterson received B.S. and M.S. degrees in fish and wildlife management from Montana State University, Bozeman.

Norm Peterson

the bull mountains might lose their bulls

BULL ELK—AND ALL OTHER WILDLIFE IN THE BULL MOUNTAINS OF SOUTH CENTRAL MONTANA—FACE SERIOUS CONFLICTS WITH RESOURCE DEVELOPMENT.

by Gary Dusek and Larry Eichhorn

MORE AND MORE people with an ever higher standard of living are demanding more and more goods and services. This means increased resource development which creates serious threats to the future of Montana's wildlife. In the Bull Mountains area of south central Montana, wildlife is threatened because of intensified exploitation of renewable and nonrenewable natural resources.

Mule deer inhabit the entire Bull Mountains area. White-tailed deer and ring-necked pheasants occur primarily along the bottom lands of the Musselshell River. Elk and Merriam's turkey inhabit the upland areas with elk at elevations approaching 4,000 feet. Mixed ponderosa pine and grassland characterize the vegetation (except along the Musselshell River).

The population of Roundup—economic hub of Musselshell County—is declining, like that of most agriculturally based communities. From 1960-1970, 300 jobs were lost, mostly in mining and the retail trade. With a progressively decreasing economic base, the community is looking for ways to improve the local economy. Some possibilities include surface mining, logging and commercial land development. Also, the high annual average increase in marketings of agricultural products (83 per cent), increase in total cash received per farm or ranch from agricultural products sold (88 per cent) and the increase in the number of cattle (33 per cent) from 1965-1971 all indicate a continuing intensification in Musselshell County's agriculture industry. But, because agriculture has been consolidated and mechanized, the number of persons employed has not increased.

MINING AND WILDLIFE

In the past, coal mined in the Bull Mountains by underground methods created only minor surface disturbance—a few slag piles and accumulation of junk. No evaluations of the actual impact on wildlife were made.

But surface mining is an entirely different situation. Consolidation Coal Co. (Consol) estimates a reserve of 130 million tons of strippable coal to a depth of 120 feet in the Mammoth-Rehder seams. These are considered the most important beds in the Bull Mountain coal field in light of present-day economics. An estimated 34 million tons of strippable reserves, to a depth of 100 feet, occur in the McCleary and Carpenter beds in the eastern portion of the Bull Mountains.

In addition to the surface acreage affected by *actual* mining

continued

Throughout Montana, mining, timber cutting, subdivisions, agricultural practices and other encroachments by man threaten valuable mule deer habitat. (photo by Jon Cates)

operations, disturbances created by construction of railroad spurs, haul roads etc., also affect the surface. Any large-scale surface operation also can destroy wildlife habitat. Experience with reclamation of surface mined lands in eastern Montana and other parts of the nation leaves the impression that reclamation may be difficult. Therefore, it is difficult to project the long-term effect of surface mining on wildlife in the Bull Mountains.

Any disturbance of surface acreage—and in particular, disturbance of critical wildlife habitat—would be at least temporarily detrimental. Since much of the surface overlying the Mammoth-Rehder coal seams *is* critical habitat for mule deer, elk and turkey, *permanent damage definitely would occur if the mined area were not restored to its prior condition.*

When the 1973 Montana Legislature enacted "The Montana Strip Mining and Reclamation Act," the threat of large-scale surface mining in the Bulls decreased. Labeled as the strongest reclamation legislation in the nation, this law forbids contour mining. A federal planning study of all resources in the Bull Mountains, conducted in 1973 by the Bureau of Land Management, recommended that no further leasing of federally owned coal rights (45 per cent of total) be allowed in the Mammoth-Rehder and Carpenter-McCleary seams at present. Leasing on a small scale to producers supplying local markets was recommended.

TIMBER AND WILDLIFE

Timber in the Bull Mountains is an important part of the habitat for mule deer, elk and Merriam's turkeys. In addition to providing escape cover and security for all three species, turkeys use ponderosa pine as roosting sites. Also, the mast from pine trees provides an important food source for turkeys.

Most stands of ponderosa pine in the Bulls occur in densities low enough to allow a diverse cover of understory vegetation. This provides forage for mule deer, elk and turkeys, as well as nesting habitat for turkeys.

Timbered land in the Bulls totals approximately 423,000 acres, of which about 142,000 acres is in commercial stands (trees of nine-inch diameter or larger). Until 1972, local sawmills, which have operated in the area for years, produced a maximum of one to two million board feet per year. This production never exceeded the estimated annual growth of eight to ten million board feet. During 1972, the annual cut in the area accelerated to about 25 million board feet, three times the estimated annual growth.

Considering no forest management and the present growth rate of pine in the area, cutting at the present pace will deplete existing stands of commercial timber in approximately 15 years. Unrestricted timber cutting will have a detrimental effect on the three game species because it takes a long time to produce pine stands that meet habitat requirements.

Timber cutting often creates other problems. Erosion results from poorly constructed haul roads and skid trails. Because soil develops very slowly in the region, disturbance or removal of topsoil may inhibit recovery of desirable understory vegetation.

"The Montana Forest Practices Act" failed to pass in the 1973 Legislature. The bill recognized the importance of state and private forest lands. It was written to assure continuous growth and harvest of trees, while protecting and maintaining soil, air, water and wildlife habitat in the forest.

SUBDIVISION DEVELOPMENT AND WILDLIFE

Individuals who see the sedate beauty of the Bull Mountains as a marketable commodity have purchased approximately 19,000 acres of agricultural land adjacent to U.S. Highway 87 for subdivision into small tracts for homesites. Most of this acreage has been sold, but very few homes are under construction.

Much of this 19,000 acres is critical habitat for mule deer and turkeys. Increased human activity, home construction, networks of poorly constructed roads and poor waste disposal resulting from inadequate planning will deteriorate or eliminate much of this important habitat.

Most land in the Bulls is privately owned. Some limited recreation opportunities are available. If the full potential of homesite development is realized in areas already purchased for subdivision, further reduction in quality and quantity of public recreation will occur.

AGRICULTURE AND WILDLIFE

The dryland farming operations that followed the cattlemen of the 1880s weren't very successful, and cattle ranching remains the dominant agricultural activity in Musselshell County.

Much of the Bull Mountains area has no grazing management program that considers the needs of wildlife. Many nontimbered sites receive heavy, sustained use by livestock. Adjacent timbered sites, particularly hillsides and ridges, receive lighter use, and appear to be in better condition.

Mule deer, elk and turkeys use nontimbered sites primarily during periods of feeding. However, most of this use occurs where there is little livestock or none at all. Very few of these game animals are observed where livestock graze vegetation to nearly bare ground conditions.

Low reproduction of mule deer, as evidenced by doe/fawn ratios, occurred during the last several years in the Bull Mountains. Productivity is directly related to nutritional quality. Deer require abundant and diverse quantities of herbaceous plants during spring and summer. During winter they need an available and abundant supply of palatable shrubs. A deficiency in any one of these nutritional requirements adversely affects reproductive success. Therefore, it seems that overgrazing by livestock in the Bull Mountains may inhibit productivity of mule deer.

Elk are more adaptive feeders than mule deer. They inhabit terrain less used by livestock during winter and spring. But, if range conditions deteriorate because of overuse by elk or livestock, the reproductive performance of elk would probably deteriorate also.

Turkeys depend on a wide variety of fruits from shrubs, seed production from grasses and forbs, and mast from ponderosa pine. Except for mast from pine trees, much of their food comes from nontimbered sites—which also receive heavy use by livestock. Overgrazing by livestock also eliminates this source of food.

The deciduous tree/shrub sites along drainage bottoms that turkeys depend on for winter habitat (in areas like the Long Pines of southeastern Montana) are lacking in the Bull Mountains. This may be one reason why turkeys depend heavily on feedlots and farms in the Bull Mountains. A study conducted in New Mexico supports this contention. In that area, turkeys relied heavily on cultivated sites in regions overgrazed by livestock.

Further intensification of livestock grazing will further limit game populations in the Bull Mountains.

THE FUTURE?

Although technology has created and improved a life style we all enjoy, technology hasn't initiated very many breakthroughs to reconstruct or replace wildlife habitat lost as a result of this technology. Further intensification of resource development presents a dismal picture for the future of our wildlife populations.

Industries in the Bull Mountains such as mining, logging, commercial land development and agriculture cannot continue to expand without considering wildlife habitat requirements. If this expansion continues, additional wildlife habitat will be eliminated and wildlife populations will continue to decline.

Changes in land use practices do not necessarily mean a reduction in wildlife populations, but the method and the degree of land use *does* determine the fate of wildlife. A strong forest practices act, homesite zoning laws, Montana's mining reclamation act and livestock management systems like rest rotation grazing may provide some encouragement.

Let's hope that adequate planning and foresight become a reality in future land use decisions in the Bull Mountains—instead of an afterthought.

ABOUT THE AUTHORS

Gary Dusek is a planning ecologist for the department in Roundup. He is project leader of the Bull Mountains Coal Development Study. He received B.S. and M.S. degrees in fish and wildlife management from Montana State University, Bozeman. Larry Eichhorn, who holds a B.S. in range and wildlife management from the University of Montana in Missoula, is a natural resource specialist for the Bureau of Land Management in Lewistown.

editorial

the fallacies of meddling with the clouds

Once again, the topic of weather modification has gone another round of vigorous debate. As before, the Department of Fish and Game strongly opposed the objectives of the program which would increase the snowpack in the South Fork of the Flathead River drainage and accommodate another severe drawdown of Hungry Horse Reservoir.

Our opposition stems from concern and responsibility for big game, primarily elk, which winter in the area proposed for snow accumulation. But in addition, we fear for fish populations which are seasonally dependent upon what little impounded water is left in Hungry Horse under present management practices. In both cases, existing habitat conditions are considered marginal. Consequently, animals which occupy that habitat are vulnerable even to very minor manipulations of their habitat.

Data presented in support of our position was never refuted by the weather modification project sponsors (Bonneville Power Adminstration). Instead, proponents of the program frequently leveled the accusation that we cared more for fish and elk than for people. They also implied that the human demands for energy should be met *at the expense* of wildlife if necessary.

Our critics frequently spoke in terms of homes, schools, pollution abatement facilities and iron lungs as needing electrical energy—all obviously worthwhile and high priority consumers of power. There can be little disagreement with this reasoning.

However, energy demand can and must be probed to a greater depth before we will cease our opposition to increased environmental stress on Montana's wildlife. It is difficult to feel sympathetic toward a utility which is wringing its hands over the 1973 energy shortage, when in 1972, this same utility (Pacific Power & Light) published a bulletin inviting industry to locate in northwest Montana and luring them with "the availability of abundant, reliable, low-cost electricity." Surely these learned men understood that just as rivers flood on one extreme, a drought can be anticipated on the other. To depend on the benefits of hydroelectric power also includes accepting the limitations of this power.

The flagrant wasting and incredibly frivolous uses to which power is committed in the Pacific Northwest are too numerous to list and certainly obvious to even the casual observer. Individual consumers have already demonstrated their willingness to begin adjusting to the available energy supply by significantly reducing their individual consumption. Utilities have acknowledged this. What we now eagerly await is a real commitment from energy marketers to end regional "boosterism" and substitute efforts toward stability.

We look forward to extinguishing the garish urban neon that constantly assaults our visual senses with commercial hustlings. We yearn for a Christmas season celebrated by lighting a candle commemorating the Prince of Peace in lieu of electrically decorating our retail temples and streets.

If after having accomplished all these tasks in our effort to live with the land's ability to sustain us, we are still short of energy for homes, schools, pollution abatement and iron lungs, come back and we'll talk about the weather.—*Jim Posewitz*

dear F&G

"I ain't no grass-root."

The editorial by J. George Hummel in the Sept./Oct. 1973 MONTANA OUTDOORS was appreciated and, for the most part, well received. I must agree that the land grab in Montana has become critical. More than that, it is most serious to those of us who are native Montanans and accustomed to, more or less, unrestricted access to public lands. I also agree that if the present trend is allowed to continue, there will be no "public lands." There will be no "free enterprise" allowed to the average hunter. How many average hunters in Montana can afford to belong to a private club at anywhere from $500 to $1,000 in fees and dues?

In the Flathead, where I was born and raised and continue to reside, the thing has gotten out of hand. Not only is it a menace to hunting privileges, but also to the ecology of the area. This land grab can lead only to eventual extermination of all wildlife.

As an "old-timer" here, I could cite many examples. But, the issue is to put a stop to the menace before it is too late. The plan outlined in MONTANA OUTDOORS is more or less logical and sound. Only a thing or two needs to be clarified.

Perhaps Montana sportsmen are unique. That I really don't believe, but they may be, pertaining to the Department of Fish and Game. Most, or I should say many (a good many), of the rank and file in the category commonly referred to as sportsmen have no faith in the department nor in the people that are responsible for its administration. The average "old-timer" and run-of-the-mill hunter do believe that the people in the driver's seat of the department are "overeducated, incompetent nincompoops," (to quote one gentleman that I interviewed) and are only out to get a raise in pay and subsequent benefits (pertaining to the raise in hunting fees).

This same gentleman also stated, "Give 'em an inch an' they'll take a mile. All they're after is to turn the huntin' over to the 'big money boys' an' to hell with us fellers 'at ain't got no hunnert dollars to pay for a deer tag! I been huntin' 'round here since 1925 an' some years I got skunked an' some years I done a'right an' durin' the depression ev'body ate venison an' the game warden did too an' if a feller acted like a good feller anybody'd 'low ya to hunt on his land. Nowadays ya gotta have a thousand dollars to make a pack trip back inta the breaks an' ten chances to one ya won't get no game 'cause they ain't any. As far as them Fish an' Game fellers is concerned, I wouldn't trust 'em 'round the corner.

"An' another thing, them fellers talk jist like them fat-belly'd politicians as get up there on that stage an' start tellin' what they aim to do if they can get the backin' from the 'grass-roots' an' hell, I ain't no grass-root. I'm jist an' old feller 'at's plumb sick an' tired a listenin' to them fellers say one thing an' turn right around an' do sompin' else."

That little interchange was not a figment of my imagination. That is the attitude of a good many folks in these parts. That old-timer is considerably past the age of retirement and doesn't hunt anymore, but he's not too old to vote!

There are still many acres of land in this country that are not subdivided. When a feller's out there away from the noise and smell and traffic, he has a tendency to forget about that modern bugaboo, *progress*. He is all too quick to assume that it can't happen here.

And then, of course, there's the feller that just downright doesn't give a damn. He takes what he can get, while he can get it and then moves on to greener pastures after he's taken it and to the devil with the other guy.

But it's the solid citizen and sportsman who has to be convinced—convinced not only that there *is* a threat to the future of hunting, but that there is a need to act now! He must also be convinced that the Department of Fish and Game will do as it advocates and use proceeds from higher game tag fees to insure the sportsmen of future generations areas in which to hunt, game to bag and streams to fish—without the restrictions of private clubs and too high fees that prevent the low salaried folks and so-called (I abhor the phrase) "grass-roots" from participating in the inherent and God given right to obtain the "cloven hoof" and partake of its blessings on the laden board.

Chas. E. "Hap" Riebe
Kalispell, MT

POLICY ON LETTERS

Letters published in the "dear F&G" section of MONTANA OUTDOORS do not necessarily reflect the opinions and philosophies of the Montana Department of Fish and Game. They represent the author's feelings. We reserve the right to edit letters for length.

WILL PEOPLE ENDURE WHERE OSPREYS CAN'T?

In the July/August 1973 MONTANA OUTDOORS, I noted that Flathead Lake cherry growers claimed that DDT (which is known to be involved with population declines in hawks, eagles and ospreys—as well as other higher animals) was not being used. I think cherry orchard areas could well have had much to do with the osprey decline. If my memory serves, some orchardists were using DDT dust on cherry fruit fly only a few years ago.

There are many apple orchards along Flathead Lake and until recently DDT (two pounds per one hundred gallons water) was sprayed on several times per year in areas where the codling moth (an apple orchard pest) had not become resistant to the DDT.

Until recently DDT was also the recommended mosquito control. I'd like to encourage you to check what chemical was used when and where in any recent organized or unorganized mosquito control program in the Flathead area. I think you will find large amounts have been dumped on the land and water in the north end of the valley over the years.

DDT-polluted insects, whether lethal or sublethal, have time to fly out over lakes and other bodies of water where they settle on the water. On a calm day, they can be seen from shore. This settling of terrestrial insects on water, with or without involvement of pesticides, is a common thing. I think it's safe to say most of these insects become fish food. The pollution of both target and nontarget insects is involved. This seems to me a rather simple, quick way of loading the fish and finally fish-eating birds with DDT. Any pest spraying of crops, ornamentals or forest areas contributes. Every little can of DDT purchased in the drugstore or wherever contributes its little bit. Remember tons of it have been sold over the years.

I hope you can carefully track the significant souces of DDT's introduction into the Flathead environment. We are told to think of Montana as a fine, undesecrated place. It's just not true—even though we can make the rather weak claim that Montana is better than a lot of other places. A more detailed understanding of the sources and introduction processes for chemicals troubling the ospreys would be helpful information for everyone. Who knows, maybe people will not endure where ospreys and other unimportant (?) animals do not do well. If I know people, you will have to make a very detailed, accurate case in support of the ospreys' troubled environment to overcome apathy and any pinch on vocal, special interests.

Clayton V. Berg
Helena Valley Nursery
Helena, MT

COWS OR COAL?

I have just read the "Springboard for Discussion" in the September/October 1973 MONTANA OUTDOORS, and I find it too much to resist.

continued

Gene Tuma and Audrey Wagner seem to have a lot of company loyalty—a good point—unless it overrides good judgment and consideration for others.

Their opinions seem to stem from ignorance or contempt for those of us living in eastern Montana and for our state in general. It could be the latter, because I remember what Massachusetts Gov. Saltonstall said when a wool processing plant was proposed for Wyoming back in the '30s—that the people of the West didn't have the know-how or intelligence to operate such a plant.

It seems to me that the part of eastern Montana overlying the vast coal fields has been producing some prize beef for a long time, and that open pit mining will ruin a lot of cow range. The question, as I see it, is whether it is better to leave that land for long-term production of beef, or to tear it all up in a few years for a quick and short-lived profit to outsiders.

If there is so much coal that it can be taken by underground methods, then let the coal companies take that first.

Chas. Kinyon
Fort Benton, MT

WILDLIFE GROUPS SHOULD UNITE

I have followed your magazine enthusiastically for a year now. I feel it is the best magazine published. Your environmental articles have given sportsmen the information needed to fight pseudo-environmentalists.

Despite determined efforts by the Department of Fish and Game and other concerned groups here and in other states, progress has been slow. With the "energy crisis" now, we are losing the most important war we have ever fought. Part of the problem is that there is not enough money to buy land, educate the public, conduct research and do all the other things necessary to save our sports and our environment. Out-of-staters are willing to pay a lot of money for the opportunity to come here to hunt and fish and enjoy our state, yet we aren't. If we want to keep our state the way it is and possibly improve it, we'll have to pay for it. I feel $3 is awfully cheap for the opportunity to hunt elk.

But I feel the biggest problem is that concerned groups in this and other states have failed to unite. If the Fish and Game Departments of all the states, as well as Ducks Unlimited and as many other such groups as were willing, united and informed the public through television, radio and magazines, things might improve. Much more publicity of the sportsman's role in conservation and the environment is vital to keep the sport and wildlife alive.

With the way telethons make money, an Environmental Telethon (on National Hunting and Fishing Day, of course) seems like a good idea. It would serve a dual purpose by raising money and educating the public. The money would be used for a central group to buy land of special significance in different states or do whatever the committee decides. I don't know if it would work or not, but it's an idea and we could use ideas.

Guy Dubois
Ft. Shaw, MT

STRIP MINING LOOKS AWFUL—DURING AND AFTER

I read the "Springboard for Discussion" while looking through the September/October 1973 issue of MONTANA OUTDOORS.

I don't know where Mr. Gene Tuma gets his information ("To many western Montanans, eastern Montana is just one great big ugly.") but I really doubt if what he said is true. I know quite a few people from western Montana, and I've never heard anything to that effect at all. I would like to ask him if he's ever been to eastern Montana. I rather doubt it—at least I don't think he's ever been near where I live. It's true that eastern Montana doesn't have some of the most spectacular scenery in the world, but I wouldn't trade it for all the mountains in the Rockies. It's the people that make an area what it is, and western Montana has some of the nicest you'll find anywhere.

This is for Mr. Wagner. I agree that strip mining looks like the devil. But this, as far as I'm concerned, is true both during and after.

The returning of the land to its natural state that the mining companies claim to do is the biggest hoax of all, at least in most cases. It might work for a couple of years—just long enough for the companies to take their "success" pictures. But in a few years, it is just like it was before all the "effort"(?) was put out to return the land to its natural state.

So what if the mountains weren't doing anything but growing trees that weren't being harvested? Trees don't harvest themselves, you know. Some of that country is very rugged, and if it were up to me, I'd leave it alone.

Someday in the future—and it may not be all that far off—we might wish we hadn't tampered with so much land and ruined it. Mother Nature heals herself, but it takes time and sometimes a little help.

This country of ours is great just like it is. Let's not scar the land anymore than it already is. Just let it be until the mining companies find better and almost 100 per cent successful ways to reclaim land.

Valeri Kaae
(age 16)
Dagmar, MT

PAY NOTHING, GET NOTHING

The appeal for higher resident hunting license fees by J. George Hummel in the guest editorial in the September/October 1973 issue of MONTANA OUTDOORS should be supported by all Montana sportsmen. Present resident license fees are very low, almost insignificant, compared to the other costs of hunting—guns, shells, boots, clothes, transportation, tents, campers, boats, decoys, dogs, etc. The other costs go for things we own, but only the license fees (or contributions to organizations like Ducks Unlimited) provide opportunities to use all of the equipment.

If sportsmen reject higher license fees and insist on paying next to nothing for game and its habitat that's just what they will get—next to nothing. And it will come sooner than anyone expects.

I would add one special plea to George Hummel's. Why don't all of us who especially love pheasant hunting ask for a special pheasant stamp (at least $5 and preferably more) to provide a fund for purchasing key habitat, leasing critical areas, for contracts with farmers to provide a little food, cover, or nesting area—or whatever else would stop the sad decline of the pheasant and restore some of its former abundance.

Robert C. Lucas
Missoula, MT

WE GOTTA CUT THOSE TREES . . . PART TWO

This is in response to Kerry Constan's "Yes We Believe in Public Involvement, But We Gotta Cut Those Trees," (MONTANA OUTDOORS, Sept./Oct. 1973).

Mr. Constan's remarks were prematurely elicited by the federal requirement that all federal agencies must prepare environmental impact statements prior to any action that may have a significant impact on the environment. The Gallatin National Forest will be preparing such statements for approximately 22 planning units on the entire forest, of which the Cedar-Bassett unit is just one.

Briefly, policy and national direction for the management of national forests are derived from the following laws:

- Creative Act of 1891—establishes "Forest Reserves" which subsequently became national forests.
- Organic Act of 1897—provides for administration of the "Forest Reserves" and specifically gives direction for protection of watersheds and furnishing a continuous supply of timber for the use and necessities of citizens of the United States.
- Multiple Use and Sustained Yield Act of 1960—provides that all national forest renewable resources will be administered

for outdoor recreation, range, timber, watershed, wildlife and fish purposes through combinations that will best meet needs of American people on a multiple-use and sustained yield basis.

• Wilderness Act of 1964—recognizes that wilderness is also a resource and directs the establishment of a National Wilderness Preservation System to be composed of federally owned lands.

• Environmental Policy Act of 1969—establishes national policy to encourage productive and enjoyable harmony between man and his environments. Directs federal agencies to use systematic, interdisciplinary approach to planning, prepare environmental impact statements on significant actions that may affect environment and obtain other federal and state agencies and public comment on proposed actions. The process involves the study, description, and development of appropriate alternatives.

The planning process that was and *is* being used for this area is responsive (by law) to the above acts (and others).

The preparation of a Forest Service Multiple-Use Plan and an environmental impact statement requires public input at several different points in time. They are:

(1) Before and during the study phase when the basic inventories of the many resources and uses are to be considered.

(2) During preparation of various management alternatives that must all be within the capabilities of the land.

(3) During formulation of a management proposal which is a synthesis of the management alternatives and results in preparation of a draft environmental impact statement.

(4) During preparation of a final management proposal and a final environmental impact statement.

All of Mr. Constan's carefully made points must and will be completely covered in the final environmental statement and no decisions have been made to date. However, there are a number of points that do need clarification at this time.

First of all, Mr. Constan inferred in a number of places that the decision has been made to log in the area. The Forest Service has not yet, nor had we at the time Mr. Constan's editorial appeared in this magazine, decided to go ahead with any timber sale in the Cedar-Bassett Creek area. We are still between steps three and four in the public involvement process. A complete analysis and evaluation of the public and agency inputs has not yet been completed.

Secondly, the 300 plus or minus healthy resident elk Mr. Constan hopes to maintain in a primitive setting is apparently proposed for occupancy of lands the Forest Service has primarily acquired since May 26, 1926 for wintering of *migratory Yellowstone elk*. This is by direction of Congress (Public Law 295). Since Yellowstone National Park officials plan no further control programs in the park, the need for this winter range may be even more critical. Development of a significant resident herd on these lands may only create more severe winter range problems.

Thirdly, reasonable access to the area is effectively controlled by local residents yet the general public is asking for reasonable access to these public lands. The proposed action calls for legal access into the area for the benefit of hunters and other forest users. This of course could be beneficial for "special late hunts."

Fourth, by implication, logging is blamed for the decline in cutthroat trout spawning in the Yellowstone drainage. Yet, it is commonly recognized that the early stocking of German brown trout (a highly competitive species) and the diversion of spawning streams by irrigation have had a far more significant and negative impact on the cutthroat in the Yellowstone drainage.

We did not recognize the spawning potential of Cedar Creek early in the planning process nor was it pointed out to us by the Fish and Game biologists (who were part of the interdisciplinary team) until late in the planning process. The final environmental impact statement will most certainly consider the relationship of the cutthroat to the overall proposal.

The decision for the management of the Cedar-Bassett area must be based on the following considerations:

(1) resources available, both existing and potential

(2) capability of the land

(3) public needs and demands

(4) laws, rules and regulations under which the Forest Service must operate

(5) national goals established by Congress.

One final point: Mr. Constan asked the question "What is meant by public involvement and what worth is it"?

Public involvement is one of the tools the Forest Service is using in the decision-making process. The objective is twofold. It gives the land manager or decision maker an awareness of public interests and attitudes at the local, regional and national levels. It also provides an expanded source of information from which to obtain data about the basic physical, biological and social resources which are pertinent to the decision. Public involvement is not a vote counting process, but rather a procedure for expanding the data base upon which a decision is made. Public responses (needs and demands) are often in conflict. The resolution of these conflicts may very well have to be decided by the judiciary process in the case of an impasse.

Lewis E. Hawkes, Supervisor
Gallatin National Forest
Bozeman, MT

We reply:

Mr. Hawkes states, "The Gallatin National Forest will be preparing such statements for approximately 22 planning units on the entire forest, of which the Cedar-Bassett unit is just one." This concerns us—does it mean that logging is proposed for 22 separate and distinct areas on the Gallatin? If so, we have our work cut out for us if we intend to try to protect such values as elk habitat from the adverse effects of logging and roads.

Mr. Hawkes goes into great detail on the various laws under which he works. It should be pointed out that most of those laws contain the words, "public," "outdoor recreation," "wildlife and fish," and others that guide the Forest Service in its decision-making process. And we want to make sure these considerations receive fair treatment during this process.

The Gallatin National Forest supervisor stresses that, "no decisions [to log] have been made to date," and that ". . . Mr. Constan inferred in a number of places that the decision has been made to log in the area." However, page 53 of the draft statement reads, "A 'no-action' alternative [no logging] was considered. Due to dynamic changes in people's needs, demands, desires, and the land itself, changes do and will continue to constantly occur. Therefore, a 'no-action' alternative is not deemed realistic." In other words, Mr. Hawkes is not being entirely truthful when he says that "no decisions have been made."

From the above, one gets the distinct impression that Gallatin Forest officials have already decided to go ahead with plans for logging, regardless of public desires, wildlife or anything else. This becomes quite obvious later in the draft statement when public response is discussed. The statement says that 8 responses favored Alternative A (logging) and 53 favored Alternative B (no logging). Obviously, *a large majority of people don't want the area logged*, but Gallatin National Forest officials continue to imply just the opposite.

Commenting on elk, Mr. Hawkes states that the Cedar-Bassett area should be devoted primarily to use by wintering and migratory Yellowstone elk. He completely misses the point that clearcut logging can adversely affect *any* elk—migrant *or* resident. Even if the area is devoted primarily to use by migratory elk, it would seem important and logical to protect it from the effects of clearcutting.

Concerning cutthroat trout, he says irrigation and diversion of streams have had a greater impact on cutthroat than anything else. Actually, though, sedimentation and lowered water quality—in addition to other factors—have resulted in adverse effects on cutthroat.

The FS official admits, "We did not recognize the spawning potential of Cedar Creek early in the planning process nor was it pointed out to us by the Fish and Game biologists . . . ." However, at a Bozeman meeting on July 12, 1973, and the following day by letter (certainly early enough to be included in the statement), Gallatin Forest representatives received information on the Cedar Creek fisheries from Department of Fish and Game field workers. Earlier in the summer of 1973, a Cedar Creek landowner and major water

continued

dear FG

user contacted fisheries personnel and told them about seeing trout in the creek. (Incidentally, this same landowner very conscientiously *leaves* water in the creek for spawning fish, contrary to the draft environmental statement's contention that "all of its waters are used for irrigation.")

Department fisheries personnel investigated the landowner's report and found that Cedar Creek indeed supported a considerable population of spawning Yellowstone cutthroat trout. Further investigation in August revealed a large number of cutthroat fry, so spawning was obviously successful. Just as obvious is the fact that clearcutting increases sedimentation, which will undoubtedly affect spawning cutthroat in future years.

The important point, though, is the failure of the impact statement to mention this. Contrary to what Mr. Hawkes says, FS district personnel had the information in time to include it. If their objective actually relates to multiple-use and "public involvement" in their decision-making process, they would include all the information available. Or—and this may seem obvious to some—did Gallatin Forest personnel purposely leave out the cutthroat information?

The draft statement—and the above letter—contain many erroneous assumptions related to wildlife. We have officially commented on these, and look forward to their correction in the final statement. With our concern and that of the public in mind, however, we await with interest the final impact statement and the final decision on the future of the Cedar-Bassett area.—*Steve Bayless*

ROSEDALE SCHOOL REVISITED

In your Sept./Oct. 1973 issue I read with much interest the Classroom Conservation, as the teacher and director of this project happens to be my granddaughter, Mrs. Becky Douglass of whom, I might add, I am very proud.

I have been indirectly involved with the Army Corps of Engineers in Kansas with the building of Turtle Creek and Milford dams and also taking 50,000 acres of good, productive land for the military reservation at Fort Riley, so I can understand the concern of these children for what might happen to them.

I am quite familar with your beautiful state, and I know you feel very strongly about keeping it that way. Last May I visited the Rosedale School and took a field trip with these kids, and I can assure you they know pretty well what conservation is all about.

You are publishing a fine periodical and trying to get the message to your readers. I'm looking forward to receiving the next issue.

Harold Goble
Wamego, KS

GUIDES TO BETTER OUTDOOR RECREATION

Beginning with this issue (see facing page), MONTANA OUTDOORS will feature a continuing series of "guides" to various outdoor recreations. The first, "Ice Fishing," generally establishes the format for future "guides." Each will appear in the center of the magazine so it can be easily torn out and carried with you in the field or stored in a convenient place.—Ed.

LAST CHANCE

to get your 1974 Montana wildlife calendar

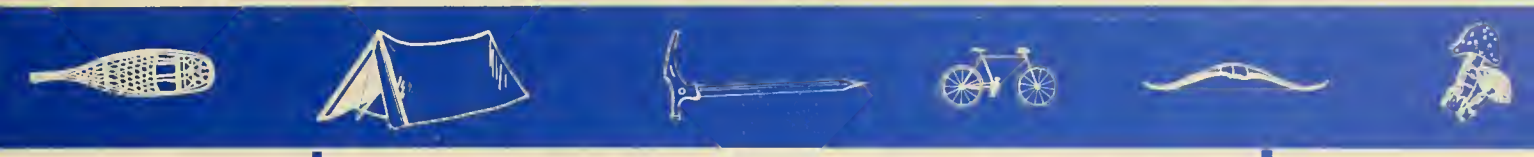
We still have some 1974 Montana wildlife calendars left. And this is your last chance to get one.

Each calendar has seven of our very best wildlife photographs in large (8½ x 11") ready-to-frame sizes and printed on high quality paper. The 1974 calendar features mule deer, grizzly, bald eagle, coots, bull elk, cottontail rabbit and bighorn sheep.

We have only a limited supply, and a reprinting won't be possible. So the remaining calendars must go on a first-come, first-served basis.

Remember—you can't "buy" the calendar. It comes only with a three-year subscription to MONTANA OUTDOORS. (With gift subscriptions or renewals, both the donor and the recipient receive a calendar.)

Use the handy, tear-out card to order your calendar and subscription. It's a little late for Christmas, but nevertheless this calendar/three-year subscription combination still makes a great gift.



MONTANA OUTDOORS RECREATION GUIDE

ICE FISHING

"HOT" PASTIME FOR A COLD DAY

By Ken Walcheck

THE LITTLE BLUESTEM grass along the lake's shoreline was clothed with fresh snow and the sun had just cleared the horizon. The bitter cold burnt our noses and turned the soft snow into diamond chips. It was a perfect day for ice fishing.

We had the eastern Montana reservoir to ourselves on this cold January day. We came prepared—insulated underwear, heavy mittens, warm hats. But our hands still turned red with cold when we removed our mittens to bait our hooks.

Life doesn't offer many guarantees, but here's one that's ironclad. Ice fishing is a productive, invigorating sport and an excellent tonic for the dead of winter doldrums.

One of the unsolved mysteries of our well-insulated society is the urge that drives an ice fisherman to pit himself against wind, snow, bitter cold and failure. Nobody is more confused by this inner drive than the ice fisherman himself.

Ask a veteran if he fishes solely for the sake of catching his limit. He will sputter with indignation. Ask him what he really likes about ice fishing. He'll likely stammer, grope for words and say something about "being out where the excitement is." He can't explain the sport's deep appeal; he only knows that it is an integral part of his world and spirit and that neither would be whole without it.

Not too many years ago, ice fishing was reserved for a few dedicated, hardy outdoorsmen who endured bitter winds, frostbite and subzero temperatures. Today that bleak picture has changed. Better equipment and warmer clothing have made ice fishing a popular family sport.

Perhaps the biggest attraction of ice fishing is its simplicity. Cut a hole in the ice, put line and a hook on some kind of rod, bait the hook and you're ready to try your luck. Experience, of course, makes for a little more success when you dunk that line into the icy water. But the important part of ice fishing is that *anyone* can catch fish.

KEEPING WARM

Nothing ruins a day's ice fishing quicker than numb hands, frostbitten ears or cold feet. Proper clothing means all the difference between enjoying and enduring this cold weather sport.

The first parts of an ice angler's anatomy to get cold on a bone chilling day are his feet. Today, many kinds of frigid weather footwear are available. Most cold weather experts recommend felt-lined snow boots as the warmest. They're designed especially for use on snow and ice. Whatever the boot, however, the thickness of the felt liner should be the main consideration. And, of course, insulated boots that fit well help assure warm feet. In addition to insulated boots, innovations in winter clothing such as lightweight underwear, vest, coveralls and parkas made of down, electric socks and knitted facemasks keep you warmer during extremely low temperatures. Remember the important consideration in selecting clothing is not the amount, but rather the type. Ice anglers have learned from experience to

continued

Perch fishing gets "hot" every winter at Canyon Ferry Reservoir. F&G photo by Bill Schneider

carry at least two pair of gloves or mittens, in case one pair gets wet. If you've done much fishing, you know this invariably happens.

Some fishermen further combat cold temperatures by using small catalytic heaters (designed for campers) or a simple gasoline lantern. A couple of handwarmers to warm frigid fingers can also be worth their weight in gold. If you still aren't warm enough, then look for an icehouse or shanty. Some of the shanties, equipped with heaters, comfortable seats and a lantern are luxurious and ingeniously designed. Easily made, portable and collapsible plywood shelters are also quite popular with the economy-minded fisherman.

Additional items that a prospective fisherman will find useful include:

- a sled or toboggan to carry gear
- a pair of ice creepers strapped onto the shoes to insure easier walking on slick ice
- an ice scoop or small strainer to use in scooping out slush which collects in fishing holes and
- a pair of sunglasses for bright sunny days.

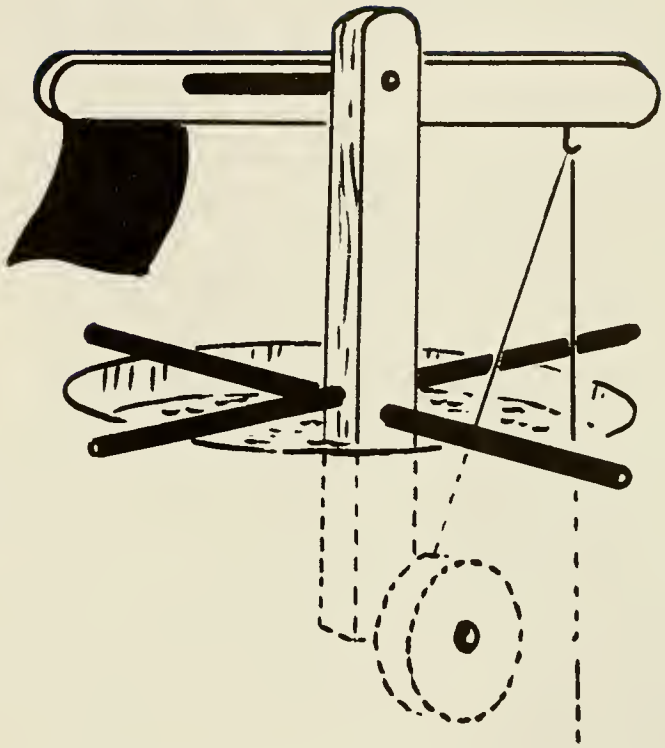
THE HOLE

Before selecting your fishing gear, think about the holes in the ice you must make. The ice spud or chisel has largely been replaced by manual and gasoline powered ice augers. Augers were virtually unheard of in this country a dozen or so years ago, but now they've become standard equipment for most serious ice fishermen. Price tags on motorized augers have also dropped and many who fish on a tight budget can afford to own one.

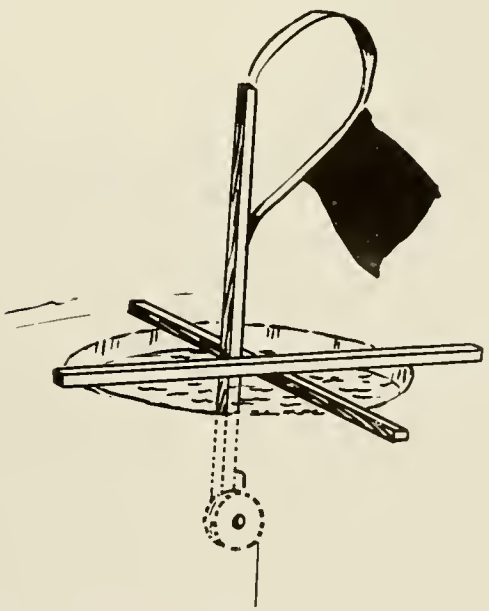
The size of the hole depends on what kind of fish you're after. A six-inch hole suffices for perch fishing, but it would hardly do for a large northern pike. An eight- to

continued

TWO TIP-UPS



Tip-ups enable the fisherman to watch several holes at once. The spring-steel flagpole is cocked. When it swings upward, you know you have a bite. Illustrations by Vern Craig



Success in ice fishing doesn't favor any age group. Photo by Gus Wolfe

ten-inch hole is usually sufficient for most fish.

Abrasion from sharp ice at the bottom of the hole will quickly cut a line under extreme tension. Solve this problem by spudding your hole in the shape of an inverted funnel. A funnel-shaped hole that's much wider at the bottom will also help guide a large fish's head into the opening.

You have a wide array of fishing equipment from which to choose. Most trout and pan fishermen prefer a short, flexible fiberglass rod with a fixed reel for storing light monofilament line. Standard casting or spinning outfits are also used, but they are awkward and ice freezes in the guides and moving parts of the reels.

Most fishing success—and especially ice fishing—depends on attention to detail. A very small difference in diameter of the monofilament line, for example, can be important. Using too heavy a line is perhaps the most frequent mistake of unsuccessful ice fishermen.

On those eastern Montana waters where set-line fishing is legal, a fishing device known as the "tip-up" comes in handy. It takes only seconds to spread the crossbars over a hole. The spring-steel flagpole is cocked and swings upward when a fish bites. With no cold fishing rod to juggle, you can monitor several holes at once—and you do it from a campstool in a portable wooden shanty while warming your hands and drinking hot coffee. Many different kinds of tip-ups exist, including handmade and store-purchased models.

Depending on the kind of fish you're after, bait can be quite variable. Ice flies, jigs, minnows, worms, corn, marshmallows, lures and the larval stage of various insects are all common baits.

In some parts of the state,

the most popular of all larval baits is the common mealworm. These larvae are sold by most pet shops as food for lizards, snakes, mice and other animals. Mealworms can also be bought from several mail-order houses, and most bait dealers around popular ice fishing areas stock them.

FISHING TECHNIQUES—SECRETS TO SUCCESS

The ice fisherman's greatest challenge is finding the fish. In many productive lakes, the fishing in one location may be about as good as in another. On less productive lakes, holes must be drilled strategically. In winter, fish school in larger numbers than in the summer. Shoreline and other shallow areas—normally alive with fish in the summer—are often barren in the winter since most fish school up in deeper water.

When an ice fisherman tries an unfamiliar lake, he's confronted with a flat, nondescript surface. It's hard to believe that beneath the ice lives a dynamic community of assorted aquatic organisms.

Fish select and remain in areas that best satisfy their needs. Carbon dioxide, light penetration, acidity, alkalinity, water temperature and the food supply affect the fish's ability to survive. But the most important factor is oxygen. Oxygen levels are not necessarily the same in all parts of a lake. Some areas may be lethal to fish, while other areas can support them adequately. Inlets, especially well-oxygenated brooks and streams, recharge the lake with oxygen locally at the entry point. These areas should not be overlooked by the ice angler.

Some fishermen claim that widely spaced holes are more likely to intercept a traveling school of fish. This may be correct, but such a setup seldom *holds* a traveling school of fish. Most anglers think that although tightly grouped holes may be found by fewer schools, they keep the fish busier and prolong action.

The fact that you've drilled holes over fish doesn't guarantee success. The behavior pattern of fish in an ice-locked lake is much different from that of fish in a lake in the summer. Since fish are cold-blooded, they are more sluggish in winter. Their body processes slow down considerably, food requirements are greatly reduced and growth is minimal.

Most anglers would also suggest changing holes when the action slows. The action may be fast and furious for awhile, but then it falls off abruptly. This is characteristic of ice fishing. A fisherman who moves around, cuts new holes and changes the depth of his baits will be the first to get things going again.

Lots of fishermen take their families out on the ice, auger holes and spend the entire day in one spot. If the fish bite these anglers are happy; if not, there's no great concern. The smell of freshly brewed coffee and sizzling hamburgers makes them forget quiet bobbers or motionless tip-ups.

One of the quickest and easiest ways to find a good ice fishing spot is to look for clusters of other anglers. They're likely to be local people who know the lake and are fishing the most productive spots. Ice fishermen are a friendly lot, and they seem to exude a sense of well-being and merriment that is contagious. Don't be afraid to walk over and ask about fishing success, what baits and artificials they're using, etc. Chances are, you'll be invited to join the crowd and get in on the fun.

When fish are biting, it's important to be ready. Details like correct line strength, depth of the bait, the right bait and a sensitive feel for strikes contribute to success.

Some fishermen have trouble detecting a strike—with good reason. In winter, fish can be quite temperamental and feeding sometimes seems to happen in

continued

FISH FRY ON ICE

Ice fishing isn't all science. Actually, it's an art—the art of relaxing, getting away from it all, catching a cool breeze, watching sundogs in the winter sky, feeling excitement, catching a fish and preparing a fish fry that's guaranteed to lift you out of the ordinary culinary ruts.

Top off your fishing trip with a gourmet delight that reaches the heights of *haute cuisine.*

The ingredients are simple: flour, salt, freshly ground pepper, cooking oil, tartar sauce and fish. Although any kind of fish can be used, it can't be caught just any time. It must be taken on a cold winter day and only through the ice.

One doesn't need any elaborate cooking gear. A one- or two-burner camp stove, frying pan and eating utensils will suffice.

Fillet the fish before they freeze solid and cut into bite-sized pieces. Place the fish cubes, flour, salt and pepper in a paper or platic bag and shake until well coated. Drop the floured pieces into the hot cooking oil. In a very few minutes the fish cubes will turn brown. Season with more salt and pepper. Remove from the pan and drain on a paper towel. Serve with hot tartar sauce.

Spear a piece with your fork, place it in your mouth, roll it around to savor all the flavor, chew it and you have just sampled a delight that will remain in your memory for many days to come.

	Lake	Species	Bait used
WEST CENTRAL MONTANA	Georgetown Lake	rainbow, kokanee	corn, maggots, fresh-water shrimp
	Placid Lake	rainbow, cutthroat, brook trout	maggots, corn
	Brown's Lake	rainbow	maggots, corn
CENTRAL MONTANA	Holter Reservoir	rainbow, yellow perch	corn, worms, lead-headed jigs
	Bean Lake	rainbow	corn, worms
	Lake Frances	northern pike, yellow perch, ling	corn, worms, frozen smelt
SOUTH CENTRAL MONTANA	Cooney Reservoir	rainbow	corn, marshmallows, worms, cheese
	Deadman's Basin	rainbow, brown trout coho salmon	corn, worms, cheese, marshmallows
	Lebo Lake	rainbow	corn, worms, cheese, marshmallows
SOUTHWESTERN MONTANA	Canyon Ferry	rainbow, brown trout, yellow perch	night crawlers, salmon eggs, cheese, marshmallows, perch meat
	Daily Lake	rainbow, yellow perch, kokanee	perch meat, salmon eggs, night crawlers
	Hyalite	cutthroat, grayling	night crawlers, cheese, marshmallows, ice flies

slow motion. The fish approaches a lure or bait slowly and often studies it for a long time. The take is delicate, and the effect on any high floating bobber is slight.

Some experts correct for this lack of movement by using submerged bobbers which are more sensitive than conventional fishing floats. A real professional will take this a step further by using his thumb and forefinger to scrape a series of kinks in his line just below the float. The fisherman watches the crimped line closely and strikes when one of the kinks straightens out.

TWITCHES, JIGS AND THRUMMING RODS

Fish can sometimes be

	Lake	Species	Bait used
NORTHWESTERN MONTANA	Smith Lake	perch	maggots
	Foys Lake	rainbow	corn, wood grubs
	Carpenter Lake (Terriault)	rainbow, cutthroat	corn, maggots, wood grubs
SOUTHEASTERN MONTANA	Tongue River Reservoir	northern pike, walleye, perch, crappie	minnows, smelt
	Clark's Reservoir	rainbow, brook trout	mealworms, corn, worms
	Johnson's Reservoir	northern pike, perch	worms, smelt
NORTHEASTERN MONTANA	Nelson Reservoir	walleye, yellow perch	minnows
	Fort Peck Reservoir	walleye, yellow perch, sauger, ling, northern pike	minnows, smelt
	Fort Peck Dredge Cuts	walleye, yellow perch, northern pike, rainbow, bass	minnows, worms
(Many northeastern Montana stock ponds provide good ice fishing for rainbow. Since these are too numerous to mention, consult Dept. of Fish and Game personnel at the regional office in Glasgow for further details.)	Gunshot Reservoir (consists of several reservoirs)	northern pike	minnows, smelt (also open for spear fishing)
	Nichols Coulee (six ponds in this complex located within a few miles of each other)	rainbow	corn, cheese, wood grubs
	Cole Ponds	northern pike, yellow perch, rainbow	minnows, worms
	Whitetail Reservoir	rainbow	corn, cheese, wood grubs
	Box Elder Reservoir	rainbow	corn, cheese wood grubs
	Fresno Reservoir	walleye, northern pike	worms, lures (also open for spear fishing)
	Ester Lake	walleye, northern pike	minnows, smelt (also open for spear fishing)
	Little Warm Reservoir	walleye, northern pike	minnows, smelt (also open for spear fishing)

stirred into action by using a thrumming rod. This rod incorporates a special trigger mechanism built into the handle that gives tantalizing quivering actions to a submerged lure. This pulsating action, if properly used, will sometimes tantalize a fish into striking.

Jigging is another technique. If you don't know a veteran who can "show you the ropes," just go where the ice fishermen are and watch them. Each angler has his own jigging variations. One fisherman may twitch his rod as if he were nervous. Another may use a series of upward sweeps of his rod. A third may use a slow arm roll as a starter, then do some

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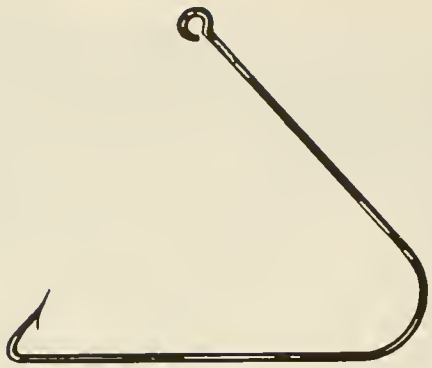
SWEDISH HOOK



erratic twitches and end up with an arm roll again as his lure approaches the surface. Whatever the technique, jigging does pay off.

"Live bait's good," an old fisherman told me many years ago, "but too many men let the bait do all the fishing. They just sit around and wait. If you want to catch fish, you've got to get up off your haunches and jig."

A remarkable and relatively new ice fishing technique uses a Swedish hook baited with a frozen chub or smelt. It's increasing in popularity, especially when fishing for large northern pike in central and eastern Montana. This unique hook with a special bend is 10 inches from the eye around to the point.

Since chub and smelt are classified as oily fish, many fishermen assume the oily scent in water appeals to large pike. Fishing success depends on keeping the dead bait suspended from a tip-up line in a perfectly horizontal position. A nail pushed through the mouth into the body cavity will help balance the bait and increase fishing success. Breaking the spine just in front of the tail, along with the cartilage connecting the pectoral fins to the body, also helps. When the bait hangs in the water, tail and fins will wave with the slightest current.

ICE FISHING DANGERS

In spite of all the fun ice fishing offers, it does have certain pitfalls, and the ice itself is one of them.

Each winter, persons are stranded by sudden blizzards, fall through unsafe ice and drown or subsequently freeze because of wet clothing, are frostbitten, or injure themselves while walking or running on slick ice.

Too often people are tempted to go fishing before the ice becomes safe. Avoid ice less than *four inches* deep. Even then, it's not good practice for members of a fishing party to group themselves at closer than 20- or 30-foot intervals.

Snowmobiles can be great when you want to fish an out-of-the-way spot, but the ice should be at least five inches thick—and even more—for heavier vehicles. Stray currents and underwater springs spell danger and local sources should be consulted about the best routes. No matter how thick the ice is, be alert for cracks and fissures. They occur on larger lakes when strong winds shift the position of the ice. Watch small children and don't let them wander too far away from the rest of the group.

Traveling on a frozen lake after dark can be risky. An ice fisherman should never go out alone or without a light, even on a familiar lake. Pressure cracks and weak spots can suddenly develop in the ice and it is easy to stumble into these in the dark. On large bodies of water, especially on cloudy nights, you can lose your sense of direction and walk toward open water rather than toward shore.

Common sense usually prevails in most emergencies, but sometimes this attribute cannot cope with the conditions at hand. Anticipating all possibilities may not be possible, but at least the most likely conditions can be guarded against. Taking a few precautions can make the difference between mere discomfort and the loss of life.

Each year the crunch of ice augers and the thump of heavy spuds attract more and more people to the winter sport of ice fishing.

With proper gear, a variety of baits, warm clothes and a knowledge of the lake and the fish, you can extend your fishing enjoyment and success all through winter.

In short, ice fishing has all the potential for a very "hot" pastime—a fascinating sport any number can play. Why not try it?

ABOUT THE AUTHOR

Ken Walcheck is the department's regional information officer in Miles City. He received a B.S. in biology and wildlife conservation from Wisconsin State University, Stevens Point, and a M.S. in applied science (ecology) from Montana State University, Bozeman.

THE CATCHALL

those other energy sources

When most people mention energy, they mean fossil fuels—oil, gas and coal. But what of the other sources of energy? Are they feasible? If so, when can we expect them? The following "answers" were gathered by the Northern Plains Resource Council.

GEOTHERMAL

A study sponsored by the National Science Foundation (NSF) estimates that U.S. geothermal resources could generate 132,000 megawatts by 1985 and 3 times that by the year 2000. (The present U.S. production total is 350,000 megawatts.)

Geothermal systems require about 3-4 years for drilling and plant construction, and if manufactured on a production line, they could be made available in about 18-24 months for wells and plants. (from "Summary Report of the Cornell Workshop on Energy and the Environment" before the Senate Committee on Interior and Insular Affairs)

"[We could have geothermal power] very rapidly, because of the simplicity. At the Geysers, for example, it was less than two years from the time they signed the agreement to the time they had electrical power flowing out. They're building 100 megawatt plants there now at two-year lead times, while fossil fuel takes a five-year lead time and nuclear energy takes seven or eight." (Richard C. Bowen, chairman of the Geothermal Resources Council, in INTELLECTUAL DIGEST, June 1973)

"Richard C. Bowen, an Oregon economic geologist...believes that in a few years geothermal sources will be able to generate at least 10 per cent of our total electrical power." (That's almost twice what we're getting now from hydroelectric sources.) (Jack Shepherd, INTELLECTUAL DIGEST, June 1973)

"At the Geysers, new wells continue to be drilled and by 1975 estimates call for the project to provide enough electric power to meet industrial and domestic needs of a city the size of San Francisco." (Bowen, INTELLECTUAL DIGEST, June 1973)

The Rand Corporation has done a study of the energy dilemma in California, and reports that if California's geothermal potential is developed fast enough *no* new power plants—nuclear or fossil fuel—will be needed after 1985.

WIND

Prof. William Heronemous, Dept. of Civil Engineering, University of Massachusetts, has shown how the Long Island Lighting Co. could get 19 million kilowatt hours of power from offshore windmills by 1977.

Frank Rom, of the National Aeronautics and Space Administration (NASA) Research Center in Cleveland says, "If the government or the president made generation of clean electric power from the wind a national goal, windmills could easily make a significant impact on our total electricity-generating capacity in just ten years."

"NASA . . . estimates that 50 per cent of 1985 electricity requirements of the U.S. could be met by wind-powered generators in just one part of the U.S.—the Great Plains." (Joe Dolan, Colorado candidate for the U.S. Senate)

SOLAR

"Half the world's energy needs could come from this pollution-free source by 1980 if the U.S. made a commitment by 1975 to achieve this 1980 goal." (Dolan)

"Technical breakthroughs are not needed to solve this problem; the means to convert solar energy to electrical power is here today. The problem is an economic one." (Van W. Bearinger, a vice president of Honeywell Corp.)

Dr. K.W. Boer, director of the University of Delaware Energy Institute in Newark, Del., believes that within five years solar cells on the roof of a typical Delaware home could produce electicity at about the same cost as nuclear power or fossil fuels.

NSF believes that 10 per cent of the nation's new buildings will be equipped with solar energy equipment for heating and cooling by 1985.

"Within five years, many prestigious scientists believe solar-powered systems for heating and cooling homes could be commercially available...." (SCIENCE, Sept. 22, 1972)

"...by the year 2020 solar energy could provide 35 per cent of heating and cooling in buildings, 30 per cent of the nation's gaseous fuels, 10 per cent of its liquid fuels and 20 per cent

SPRINGBOARD

Referring to a proposed coal gasification plant to be constructed by Exxon in northeastern Wyoming, Gov. Stan Hathaway said, "This is the type of responsible development we want to see in Wyoming."

FOR DISCUSSION

THE CATCHALL

of its electrical needs." (report from NSF-NASA)

Prof. and Mrs. Aden Meinel of the University of Arizona believe that full-scale solar-thermal power plants could be built as early as 1985 with adequate research effort.

Clarence Zener, professor at Carnegie-Mellon University, believes that the entire population of the world in the year 2000 could be supplied (by sea thermal power) with energy at the same per capita rate that the U.S. now uses.

"All the 1985 electrical needs of the U.S. could be met with less than a 3/10 of one per cent degree drop in the temperature of the Gulf Stream." (NASA)

METHANE

Resource Inc. gives the following time-frame in its proposal to build a medium-sized plant, which would be fed 1,000 pounds of fresh manure (from which methane is produced) per day: program initiation, Feb. 1, 1973; construction, May 1-July 1, 1973; startup and operation, July 1, 1973.

GAME MANAGEMENT REPRINTS AVAILABLE

Four top articles on vital game management issues—"Buck Laws," "Hunting the Grizzly," "Someone Bagged the Early Bull Season" and "The Hen Pheasant" are now available in reprint form. The articles, combined into one 16-page handout are available free from any department office or by writing Department of Fish and Game; Helena, Mt 59601.

the death of the other half

The "Other Half" died. Maybe you wondered about its absence in this issue.

The column was born of a need to communicate items in which we thought women would be especially interested. We now think most women are interested in most things the magazine has to say.

Beginning with this magazine, Bill Schneider and I will work together on the "Catchall." And we think it will contain something for every one of our readers.—*Kay Morton*

CLASSROOM CONSERVATION

BASIC CONSERVATION FOR THE YOUNG CONSERVATIONIST

ANNOUNCING THE SECOND ANNUAL EARTH DAY CONTEST

Last year, we sponsored the first Earth Day Contest, and now we admit that it was an experiment. Although we were worried at times, the response was encouraging enough to prompt us to repeat it this year. Earth Day is coming, so it's time to get started, if you haven't already.

Hopefully, more schools, classes and groups of students will enter this year. We discovered that many schools had very worthwhile environmental programs last year, but failed to enter. This time, we hope they will.

The winner's names will appear in MONTANA OUTDOORS along with part of their winning

project or if circumstances dictate, a brief description of it. In addition, each winner will receive a free, one-year subscription to MO and an official letter of congratulations from Wes Woodgerd, director of the Montana Department of Fish and Game.

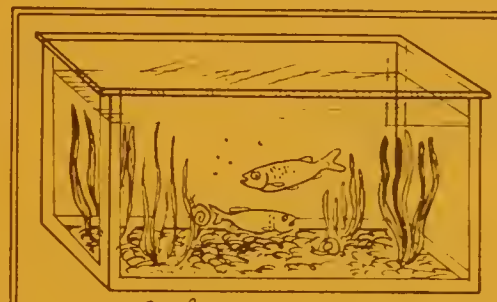
All entries must be in our office before June 15. After judging, the entries will be returned as soon as possible.

Send all entries to Earth Day Contest, MONTANA OUTDOORS, Department of Fish and Game, Helena, MT 59601.

Good luck.—*MO staff*

ECOLOGY PRIMER

ECOLOGY- THE STUDY OF HOW LIVING THINGS RELATE TO ONE ANOTHER AND TO THEIR NON-LIVING SURROUNDINGS.

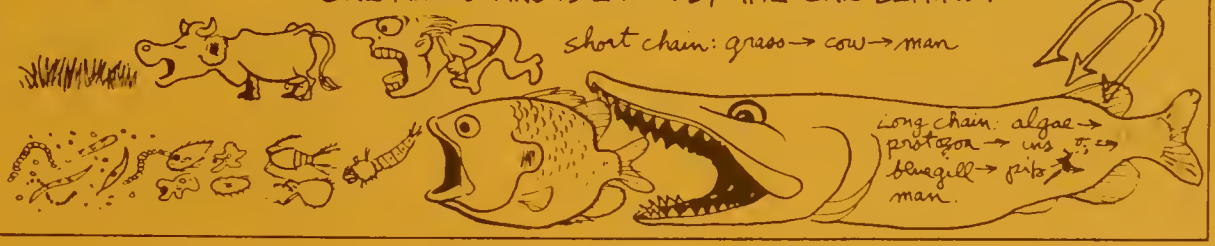


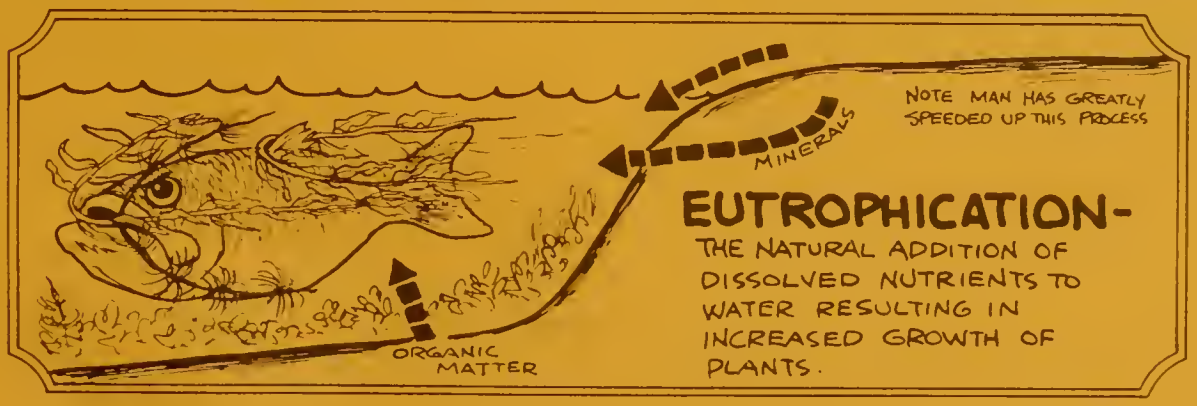
example. balanced aquarium

example. a prairie

ECOSYSTEM- ALL THE LIVING AND NON-LIVING THINGS IN A GIVEN AREA THAT HAVE SELF-RENEWING RELATIONSHIPS.

FOOD CHAIN- A CHAIN OF ORGANISMS IN WHICH EACH LINK FEEDS ON THE ONE AHEAD AND IS EATEN BY THE ONE BEHIND.



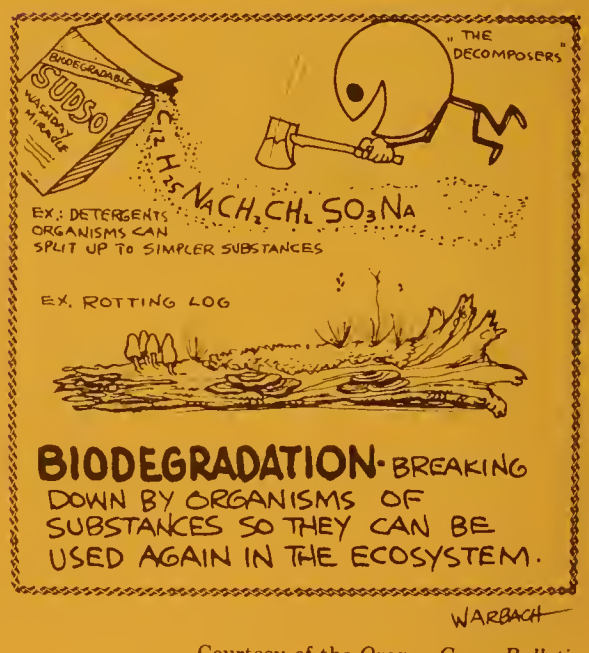


EUTROPHICATION- THE NATURAL ADDITION OF DISSOLVED NUTRIENTS TO WATER RESULTING IN INCREASED GROWTH OF PLANTS.

continued

NICHE -
(pronounced "NITCH")
A "JOB" AT A PARTICULAR PLACE IN THE NATURAL COMMUNITY.
EX. PRAIRIE DEER MOUSE AS A SEED EATER IN THE PRAIRIE.

EX.: THE PRAIRIE CHICKEN "WORRIES" WHEN BRUSH AND LITTLE TREES REPLACE HIS GRASS.
PLANT SUCCESSION -
WHEN ONE GROUP OF PLANTS REPLACES ANOTHER.


BIODEGRADABLE
SUDSO
WASTE DISAPPEARS MIRACLE
"THE DECOMPOSERS"
EX.: DETERGENTS ORGANISMS CAN SPLIT UP TO SIMPLER SUBSTANCES
EX. ROTTING LOG
BIODEGRADATION - BREAKING DOWN BY ORGANISMS OF SUBSTANCES SO THEY CAN BE USED AGAIN IN THE ECOSYSTEM.
WARBACH

Courtesy of the *Oregon Game Bulletin*

Next Time

Watch for these features in the March/April 1974 issue

—the mountain sheep
—should we have a state fish?
—more on subdivision development
—the birds of prey

WHEN YOU'RE OUT ON YOUR SNOWMOBILE...

illustration by Vern Craig

...DON'T LET THE DEVIL MAKE YOU DO IT!

This season, snowmobiles will be checked by Department of Fish and Game wardens to insure that operators are not (1) shooting from their vehicles, (2) driving game animals or (3) running machines that exceed allowable noise levels. Wardens will also check snowmobiles for current registration and display of tax-paid decals.

Legislation passed during the 1973 session provides that funds from the annual $2 tax will go to the Montana Fish and Game Commission. One dollar is used to enforce provisions of the snowmobile law and the other dollar enables the recreation and parks division to develop snowmobile facilities.

When operating a snowmobile:

DO

1. Check with local wardens or regional department offices if you have questions about snowmobile regulations.
2. Make *necessary* highway crossings at 90° to the highway direction.
3. Check your machine to see that noise suppression devices, including mufflers, work properly.
4. Avoid driving along railroad rights of of way or tracks.
5. Ask the landowner's permission before operating a snowmobile on private land.

DON'T

1. Operate a snowmobile without displaying a current tax-paid decal.
2. Operate a snowmobile on a controlled access highway or on city streets.
3. Drive, rally or harass game animals and birds, furbearing animals or livestock.
4. Shoot firearms from a snowmobile.
5. Dump garbage, litter or other debris on any public or private recreational property.—*Don Malmberg*

THE SUBDIVIDERS ARE COMING.

THE SUBDIVIDERS ARE COMING.

THE SUBDIVIDERS ARE HERE!

article by Bill Schneider
illustrations by Vern Craig

I'll venture a guess that most of us have, at some time in our lives, dreamed of a quiet place in the country—just right for a few horses, a wilderness cabin by a singing stream or a hilltop chalet with stunning vistas pouring in through glass walls.

So it is with human nature. And so it is that Montana has a conservation crisis.

Indeed, the subdividers are here—in droves. I want very much to tell you how fast Montana's landscape is disappearing beneath concrete, homes, lawns and roads—how fast the public is losing access to prime recreation areas—how seriously our streams and lakes are being polluted and how much wildlife habitat is being lost.

But I can't, because nobody knows. We must learn this. But, even more important, Montana needs a stronger grip on the development of rural land for homesites.

Hopefully, the following article will meet its calling and help bring a concerned public to arms to control the selling of Montana.

LOTS & ACREAGE AT-
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AT ISSUE — "GROWTHMANIA" STRIKES MONTANA

GROWTH AND PROGRESS—the commandments of every chamber of commerce—have been somewhat lacking in Montana for several decades. Although many will quickly disagree, it now seems very clear that this "slowness" was, in fact, a blessing in disguise.

"We were told that we were in the backwater of the nation's economic system," Gov. Tom Judge recently told the Montana Jaycees. "We were informed that [development] had passed us like a ship in the night.

"Now," he noted, "we have finally realized that while Montana stood still, other parts of the country were going too far, too fast, in the wrong direction." Montana still has the opportunity to preserve a quality environment, the governor concluded.

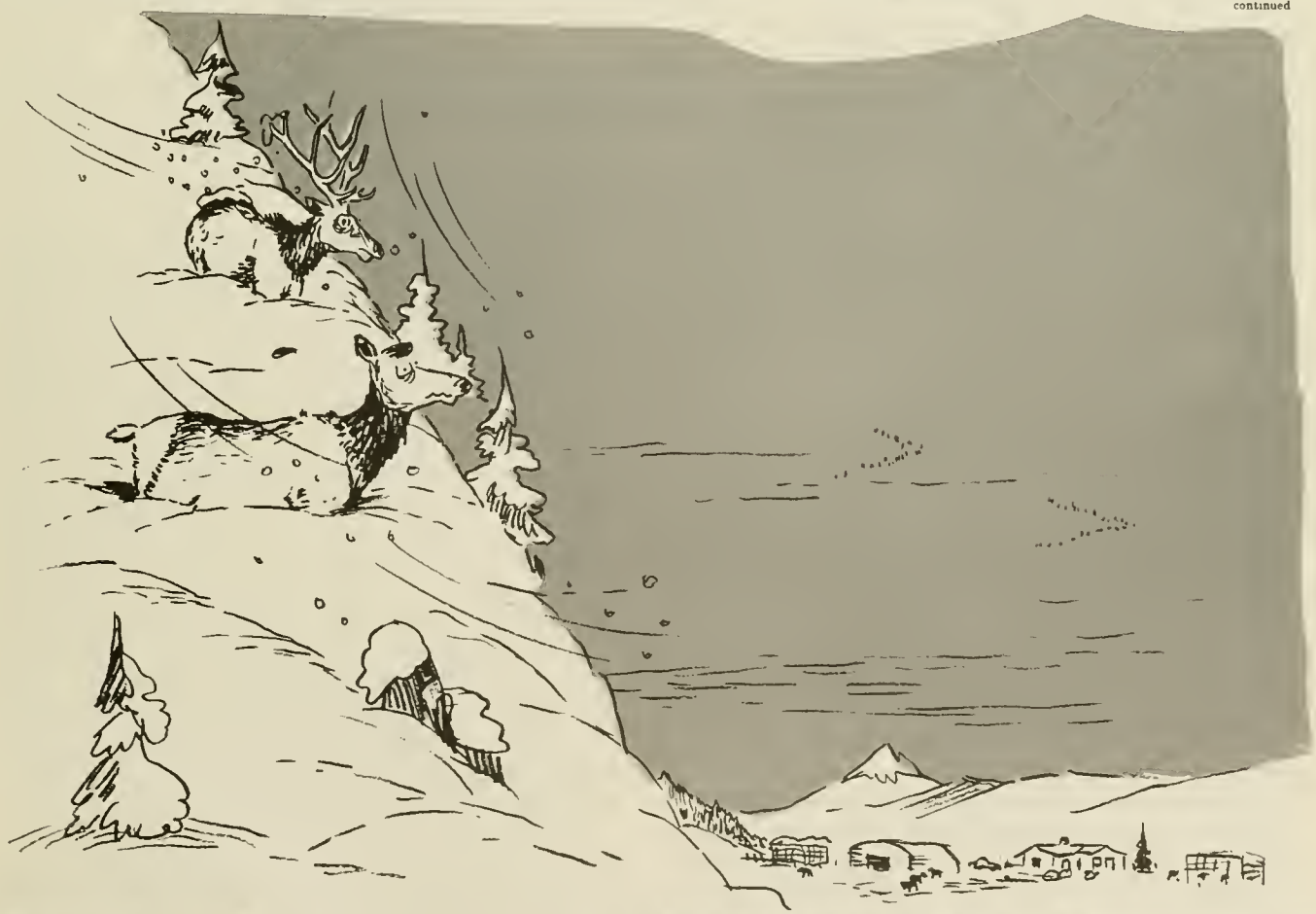
Agreeing, Leon Billings, staff director of a U.S. Senate subcommittee on air and water pollution, dispels the philosophy of growth as "an absolute necessity in a prosperous society" as a "myth." He believes "...we should test and challenge that myth in light of the impact of growth on our resources, on our environment and on our society."

But "growthmania"—as it's sometimes called—has not been seriously challenged. And, the way things look, it won't be for some time—not in Montana, at any rate.

The big news—*Montana is still undeveloped*—has leaked out. Now, the rush to develop land for homesites, is off and running—"too far, too fast, in the wrong direction."

"This business of subdividing land is almost at a level of hysteria," notes Wilbur Aikin of the Department of Health and Environmental Sciences stationed in Kalispell. "In the past six months, the developers have been in a state of panic. First, they wanted to get in before the new law (SB 208) went into effect. And now, they're trying to get it done while the market is high."

continued



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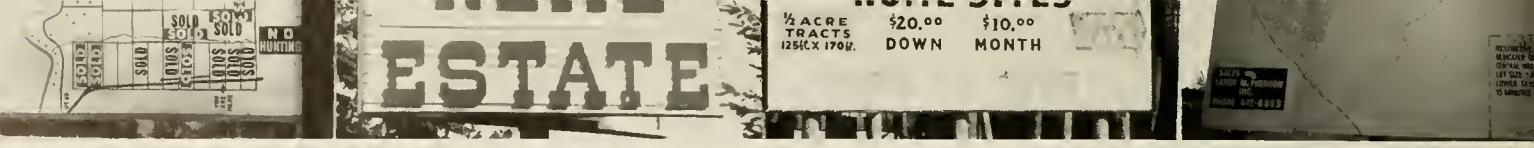
STINCHFIELD AGENCY



With this deluge of subdivisions come *more* air and water pollution, noise, people, solid waste, demand for social services and energy and *less* land for wildlife, crops and livestock.

"The agricultural base is catching hell," remarks Fletcher Newby, director of the Montana Environmental Quality Council. "And land development is a big part of it."

And, although impossible to calculate in lost cows or bushels, wildlife is feeling the same heat. In simple terms, the best places for subdivision are often the best places for wildlife.

The buyers—many of them out-of-staters—are lured to Montana subdivisions by advertisements featuring a hunting and fishing paradise, pure mountain streams, forest-ringed lakes, scenic views and unpolluted, uncrowded living conditions.

Granted, Montana may be one of the last strongholds for all this, but if the "hysteria" continues, it won't be for long. The ads don't tell buyers that when they buy their piece of Montana, they automatically contribute to the demise of what they seek.

Oddly, Montana, a state with so many natural treasures, has so few tools to protect them. Public control and input into the subdivision process can, in general, be summed up as merely extra delay and expenditure for the developer.

One official, who asked not to be named, called the process "purely a bureaucratic procedure. We're kidding ourselves when we say we have any real control."

Subdividers offering lots larger than 10 acres have a free rein—even to the extent of not being required to file an impact statement or similar environmental assessment. But the land splitters believe they already have too much bureaucratic bungling and environmental nonsense to endure. It costs them time and money—and they don't like it.

Testifying to this, Bill Diehl, a Helena developer, widely distributed his firm position. "I trust that my comments will not be interpreted as anti-environmental but rather anti-environmentalist," a letter to the local planning board began. In subsequent pages, Diehl badmouthed opposition to subdivisions as "emotional environmental rhetoric" and described Montana's proposed regulations as "unworkable, inequitable and a serious impediment to the operation of the real estate market and the satisfaction of its consumers."

Most developers share Diehl's views. Under the guise of a savior of sorts who wishes only to provide the low and moderate income family with a decent home, the realtors and developers oppose most new regulations on their activities—and especially those involving extra expense.

Colorado, a state with similar attractions, has similar development problems. Kirk Wickersham of Colorado based Rocky Mountain Center on the Environment (ROMCOE) told Montanans, "You've got a nice thing here. Recognize it and stop before you get to [Colorado's] rate of development."

"This isn't Colorado yet, but I think it will be in two years," warns Bruce Bugbee, regional planner from Missoula. "This isn't California yet. But how long ago was California like Montana? And where are all the people coming from"?

FLATHEAD COUNTY—A RECREATIONIST'S HAVEN, A SUBDIVIDER'S MECCA AND A LESSON FOR EVERYONE

Imagine millions of acres of public land, fabulous Flathead and Whitefish lakes, scenic Glacier National Park, beckoning wildernesses, prime hunting and fishing, powdered ski slopes and wild rivers—all within a few miles of your rural ranchette, and PRESTO, you're a "cinch" for a Flathead County realtor.

Of Flathead County's 3.3 million acres, about 80 per cent is in public ownership (mostly national forest lands) and another 8 per cent is owned by large lumber companies. This, coupled with vacationland attractions, makes Flathead County an absolute haven for subdividers. It has all the calling cards—easy to sell at a high profit. And that's what really counts.

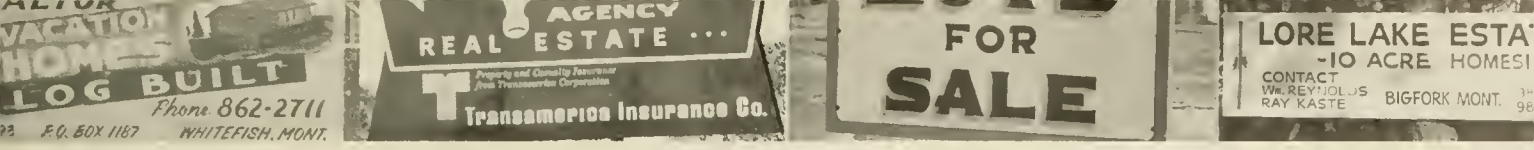
Although Montana has other subdivision hotspots, I've chosen Flathead County for more detailed treatment. Most of the logic, in general, applies to other areas in western and south central Montana.

To set the stage, consider the subdivision procedure. How does undivided land become subdivided land?

First, of course, comes the landowner's basic verdict to subdivide, plus a few related decisions—lot size, high or low density, mobile or permanent structures, special covenants, etc. The landowner becomes a subdivider.

After that, it goes like this:

• If the development contains parcels of 10 acres or less, the developer goes to the Areawide Planning



Organization. (Created by the County Commission to improve land planning, the APO is unique among Montana counties.) At this time, the developer supposedly has completed only the boundary survey. In practice, however, it rarely happens that way. Don Kendall of APO knows many developers are much farther along—even to the point of actually selling the lots. "The buyers discover they can't file their deeds until the subdivision is approved—then the developer is up here [APO] in a hurry."

• The APO advises the developer on several matters—applicable statutes, covenants, roads etc. However, he is not bound by APO recommendations.

• Then—if he hasn't already done it on anticipation—the developer completes the survey and prepares a preliminary plat. If he did this before going to APO he naturally balks at incorporating any suggested changes into his plans, even though they are, in theory, still "preliminary."

• Now the developer submits the preliminary plat to APO. Kendall and others recommend approval, continued appraisal or denial and pass on their recommendations to the appropriate planning board. (Flathead County has four.)

• After calling for public comments, the planning board refers the plat, with a recommendation, to the County Commission. (Neither APO nor a planning board can *reject* a plat. However, they can [and have] *recommend* denial.)

• The County Commissioners, with rare exception, approve it. The developer can't legally proceed without the Commission's endorsement.

• Now, the developer prepares a final plat and submits it to APO, the Department of Health and Environmental Sciences and the examining land surveyor, a county employe. The Health Department writes an environmental assessment, and, at long last, the Department of Fish and Game and other agencies receive notice of the proposed development. (Remember that the preliminary plat has been in the works for some time.) However, the APO staff has made an effort to notify the department on proposed subdivisions that they felt were damaging to wildlife. And, the new Flathead County subdivision regulations (adopted Oct. 11, 1973) contain a "referral" procedure for providing copies of preliminary plats and environmental assessments to certain agencies. "Although the Department of Fish and Game isn't specifically

continued

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designated to receive notice," Kendall observes, the department "...will receive notice of those that the staff thinks appropriate."

• When the subdivider gets the nod from these three agencies, and final approval from the County Commission, he has a green light. He can legally begin to sell the land. (Theoretically, the final plat could be denied at this point.)

Although other weak spots exist in the process, this department is especially concerned with the timing. The subdivision is usually already in its later planning stages before the department is asked to comment on the impact on wildlife.

Many times, the subdivider—confident of forthcoming approval—goes full steam ahead. When his buyers ask about it, he replies, in effect, "Oh, they'll approve it next week. Don't worry, they always do." He often adds a few bad words about planners and environmentalists slowing up progress.

On occasion, however, it doesn't quite work out that way, and his project gets bogged down in some bureaucratic paper pile. Suddenly, he's in trouble.

"Quite often," Aikin recalls from his experience, "he has sold a couple of lots. The buyer wants to take possession, but he can't because [the subdivision] hasn't been approved. [The buyer] tells the developer he wants his money back—then the developer is usually banging on our door wanting us to 'get it out' or 'make one exception'."

Given time, however, the subdivision gets the needed nod, making everything final—and legal.

The only notable exception to the customary "rubber-stamping" is development on prime agricultural land. The Flathead County Planning Board (one of the four) doesn't like housing development on farmland. They have recommended denial for this reason, but lack strong support from the Commission.

Basically, that's how a subdivision goes from conception to concrete. Remember, however, that the pace is much more rapid. Or, in Aikin's words, "There are so many [subdivisions] that sometimes I can't figure out which one I'm supposed to be working on."

After a few years of this, APO decided it was time someone studied the extent of subdivision development in Flathead County. The report (dated June 1973) covered the past 12 years—1961 to 1973.

During that time, the county had 827 subdivisions covering 43,454.6 acres. And of that total, 95.07 per cent (41,315 acres) was done by the then common "metes-and-bounds" method. Here, a landowner didn't file an official subdivision. He simply sells a piece of land; then he sells another piece and another—until its's all gone to homesites.

The metes-and-bounds system—previously used to escape all regulations—is now defunct thanks to Atty. Gen. Robert Woodahl. In an official opinion, Woodahl ruled that any division of land with one parcel, for sale, of less than 10 acres was officially defined as a subdivision, and thus subject to regulation.

Although lacking exact figures, APO assumes the trend has not slowed since its report was published. Instead, it may have increased in intensity.

The tempo of the activity speaks for itself, but that's not all. During the study APO couldn't avoid an obvious conclusion—"...that a major portion of rural subdivision activity wholly escapes public review, comment and control."

AN OLD STORY—WILDLIFE VERSUS DOLLAR SIGNS. WILDLIFE LOSES AGAIN.

A few months ago, I was discussing the practice of putting subdivisons in wildlife habitat and the developer replied, "Why I think it's a great idea. It keeps them [subdivisions] out of the farmland."

That, in effect, sums up the regard wildlife receives when rural land is developed for homesites. To date, not one plat has been rejected because of concern for wildlife. There is, however, a very good reason—it may be technically illegal to do so. Under present statutes, a county commisssion (or similar regulatory body) can't—even if it wanted to—deny subdivisions because of the adverse effect on wildlife. If it did, the courts could reverse the decision.

The Flathead County Planning Board's policy of not allowing housing developments in prime agricultural land stands on the same shaky legal ground and could be overturned in the courts. So the board could conceivably recommend refusal of a plat because of adverse wildlife impact under the same risk. But it hasn't, and all indications are that it won't in the near future.

Aikin sees the problem but sits with hands tied, lacking official authority to keep houses out of wildlife habitat. "This agricultural land [policy] is driving the development back into the foothills—back into the game range."

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Bill Bush
REALTY
FOR SALE
ACREAGE
½ MILE EAST
WESTLAND REALTY

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PH.756-9353
MEADOWS
REAL ESTATE
FOR SALE
756-3631
APPROX. 10 ACRES
WITH LAKE ACCES
FOR SALE BY OWNER
ClydeTompkins 849-5653 Big A

Kendall also lacks the directives to protect wildlife habitat from subdivisions. (So does everyone else, for that matter.) But still he sees the obvious problem. "Sewage and water pull all the weight. Wildlife just doesn't pack it." (He's referring to the basic regulation of sewage disposal and water quality control, but the complete absence of official recognition of wildlife values.)

Even more concerned, this department voices its objections to some plans, but in most cases, to no avail. When our turn to comment finally comes, we put into the public record the effect of the subdivision on wildlife. Sometimes we even recommend refusal. We know our letters are mostly an exercise in futility. But, nevertheless, our "predictions" for the site's wildlife remain in public files—a possible source for a hardy "I told you so" sometime in the future.

At times, we "hope for the best we can expect" and request specific covenants—placement of roads, different sewage systems, restrictions on pets. And, occasionally, the developer works these suggestions (that's all they are to him) into his plans. It's like Montana coal development. We get in the position of minimizing the effect rather than saying "yes" or "no."

(Incidentally, increases in the number of free-roaming dogs pose a serious threat to wildlife. Common canine activities such as destroying game bird nests and running deer have already become major problems in many states.)

In general, subdivision frenzy presents three major threats to wildlife: (1) increasing loss of critical big game winter range, (2) lower water quality because of sewage seepage and (3) reduced public access to hunting and fishing areas. But at the root of all three is increased population. More people automatically bring more wildlife habitat destruction.

Montana's new subdivision law (SB 208) has some between-the-lines help for wildlife. But you must work a bit to pick it from the legal rhetoric. The law directs the Department of Intergovernmental Relations (Bureau of Planning and Economic Development) to prepare minimum subdivision standards. These regulations (they're now in final form) act as a guide for counties which must approve regulations that are *at least as strict* before July 1974.

The regulations also "try" to consider wildlife—efforts within a law that only superficially considers such values. But even with these new restrictions, Jim Richard of the Bureau of Planning and Economic Development doubts "if a development will *not* be approved because of wildlife considerations."

One bright spot in all this darkness is the Montana Floodway Management Act. This law prohibits permanent structures in the 100-year floodplain (an area that hypothetically floods once every 100 years).

Floodplains have always been top wildlife areas—so the act can be appreciated with little effort. However, a 100-year floodplain can still be part of the subdivision's "open space" commitment called for in SB 208.

So, in the end, wildlife loses again. One official candidly put it in its correct perspective by saying, "Everyone is making so much money, they just don't care about wildlife." If you don't believe it, just try to tell a subdivider who's selling his land at a 250 per cent profit that he shouldn't subdivide because he's destroying deer winter range.

THE BIG QUESTION— IS MONTANA READY TO ACCEPT THE ANSWER?

Superficially, Montana can probably withstand a threefold or more population increase. That would bring the state's population to a mere two million or so—not so impressive when compared to other states. Right now, Montana ranks 41st in population among the 50 states. And TIME magazine estimates the entire U.S. population could be packed into Texas, creating the same density now found in England.

So, in view of this, Montana, the fourth largest state, must have room for a little growth. Right?

Wrong—if you examine the populated states and England for acres of productive farm and ranchland, remote backcountry, upolluted air and water, spacious parks, free public hunting, wild trout fishing and other taken-for-granted Montana traits. Would Montanans trade their way of life for that of a more populated area? For those who would, this discussion is, of course, mute. But for those who would not, an answer may be within reach.

Fortunately, the first step has already been taken. Montanans, for the most part, *want* to control land use—and misuse. The next move, however, comes only with tedious effort and self-determination by many—getting the proper tools to achieve that control.

The legislature will have many options—from one extreme to the other—dumped in its lap when

continued

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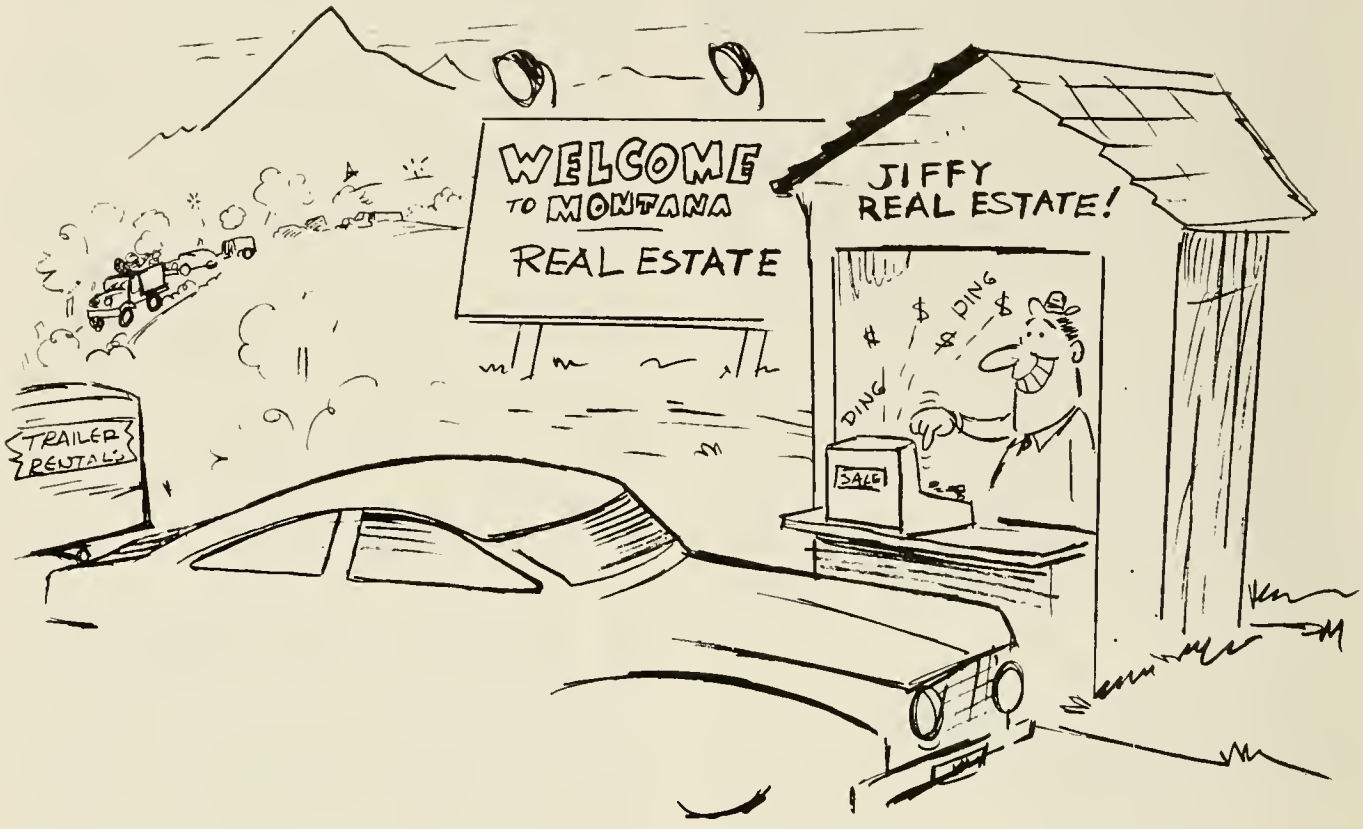

the 44th session begins this month. But a certain focal point of hot debate will be the acreage limit for defining a subdivision. (Any division of land less than 10 acres is now legally defined as a subdivision and thus subject to public regulation. Larger parcels completely by-pass the public.)

Planners, conservationists and many others believe 10 acres is much too low and keeps many developments from the public's eye. And, following the requisites of any controversy, realtors and land splitters think it's already too high and discriminatory.

Bill Cunningham, who calls his interest in subdivisions "a personal crusade," labels the 10-acre limit "totally unacceptable." He feels that, "it's essential to have at least a 40-acre definition."

Wickersham of ROMCOE concurs calling it "ludicrous." Colorado's law contains a 35-acre definition, but many prefer 40.

As in the last session, the 40-acre definition will undoubtedly go before the lawmakers this time. On the last go-around the legislators chose to only raise it from 5 to 10 acres.

Another question the legislature may be asked to answer is—should wildlife be seriously considered when planning (and approving) subdivisions? And, can certain types of development be refused because of adverse impact on wildlife?

In addition to the acre definition and wildlife consideration, many other paths for controlling subdivisions might be explored by Montanans, such as:

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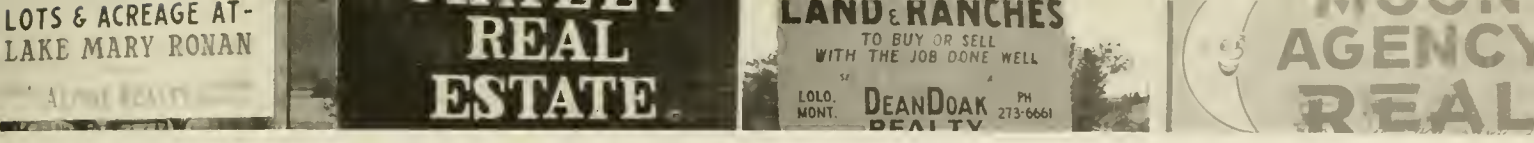


• It might be time to challenge campaigns urging people to come to Montana. In 1971, Oregon made the big move—"Please come and visit us in Oregon, but for heaven's sake, don't come and live here." In 1972, the state changed its tune to, "Don't even visit." Perhaps Montana should closely examine this attitude. And, at the very least, agencies should do some serious soul-searching before they continue to promote economic growth and Montana's natural attractions. In the long run, such promotion brings more people to Montana looking for a better place to live.

• It is imperative that the legislature *fail* to pass any law which increases state revenue from subdivision activities. Once the developers begin pouring dollars into state coffers, effective control may become impossible.

• At least three changes in the tax structure would also help—(1) a severe tax crunch on the "second home in the country," (2) a similarly harsh tax for fast resale of land and (3) somehow making it more desirable (from a tax standpoint) to live in town instead of outside the city limits, as it now is.

• The completion of a statewide comprehensive land use plan is also essential. Bugbee believes it can be done in one year, given full effort. States far advanced in land use logic—Vermont, Florida, Hawaii, for example—now have such plans.

WHAT CAN YOU DO?

Some environmental dilemmas leave the citizen helplessly asking "What can I do"? Not so with land and water development in the Flathead Valley. A new organization, Flathead Tomorrow, has formed and is growing fast. It's composed of farmers, ranchers, students, businessmen, schoolteachers and just about anyone who's genuinely concerned about the disappearing natural attraction of the Flathead region.

The new group has four primary functions—communication, research, organization and advocacy. And, according to its first chairman, Kathy Thompson, Flathead Tomorrow "...will begin a comprehensive research and education project concerning the Flathead Valley's water and land use problems, concentrating initially on subdivisions."

So, if you want to "do something" to bring sensible land and water use to the Flathead, we suggest you join—and strongly support—Flathead Tomorrow. For more information, contact Flathead Tomorrow, Box 173, Bigfork, MT 59911.

SOME ADVICE FOR ANYONE WISHING TO BUY A HOME IN THE COUNTRY

don't

• Investigate moving control of land development from counties to a state or regional body. It's a cold fact that the level of government we have charged with controlling the land (the county) is the most susceptible to pressures *not* to control it. The counties are, of course, always looking for ways to increase tax income from the land base. And allowing subdivisions is one way to do it. In a special report for the national Council on Environmental Quality, Fred Bosselman and David Callies called it a "feudal system under which the entire pattern of land development has been controlled by thousands of individual local governments, each seeking to maximize its tax base and minimize its social problems and caring less what happens to all the others." The authors concluded that "our increasingly complex society makes it impossible for individual local governments to plan comprehensively." But this switch has it opposition. During the legislature, for example, Sen. Jean Turnage (R-Polson) said, "We need a bill the people can work with, use and above all else, one that leaves control at the local level where it belongs."

Hawaii is an excellent example of what *can be done*. Shortly after statehood, the Aloha State experienced rapid California type growth—sprawling, helter-skelter subdivision development. In 1961, the legislature approved the Hawaiian Land Use Law—legislation so far-reaching it set into motion what is now known as the "Quiet Revolution" in land use planning.

The bold approach of the law—that privately owned land is not a *commodity* for exclusive use of its keeper, but rather a *public resource*—will spark the hottest political/environmental fire ever faced in Montana and other states. Such legislation—bent on protecting the two-thirds of Montana not in public ownership—could do more for the state's land base than all environmental laws ever passed.

Ever since the Massachusetts Bay Colony forbade "nuisance" industries in certain areas, up to Hawaii's precedent and until 1974, most environmental legislation only hints at piecemeal action. Granted, pollution control, strip mined land reclamation, water use, utility siting etc. demand attention. But still, sometimes it seems like trying to stop a flooding river by only diking the original channel.

The driving desire behind Hawaii's law was preservation of agricultural land. But as tourism overtook agriculture in importance, conservationists and farmers alike saw the farmland preservation as a way of squelching sprawl *and* protecting the land.

Other states have other motives, problems and solutions. But all efforts—some unknowingly—chip away toward the new concept of land. That is—*land has more worth than making money for its owner.*

Any efforts to take Montana land from this 19th century strangle hold can expect intense opposition from the landowning public, particularly farmers and ranchers. Nevada had the same situation. But when planners explained the potential future of land use, everyone had a big surprise. "Everyone said 'you'll never get the cow counties to go along'," reports Nevada's top planner. "Well, the cow counties are pushing us. They have the most to lose, and they know it."

So, in truth, the new concept of land *protects* private holdings; it doesn't *take* them, as is often charged.

Another path to proper land use has already been introduced in the Montana legislature—SB 449, the "critical areas" legislation. The act, if passed, will attempt to protect areas of "unique natural qualities" (including prime wildlife land) from major land development. SB 449 was held over from the last session. But in view of the stepped up subdivision activity of the past year, lawmakers will probably take a closer look at it this session.

MINI-EDITORIAL

Greed, the unending quest to add zeros to bank balances, can completely cloud concern for the land. And this greed is living and spreading throughout Montana. One can't subdivide the land and "be concerned with the environment." Although true with some environmental issues, there's no "halfway" or "trade-off" here—either the land is developed or it isn't.

The subdividers must accept this. And if Montanans allow subdividing, they must also accept the reality of the extreme. For there's no comfort in living in a "good" development.

Even more help may come from Congress in the National Land Use Act. If Congress approves it, the Act would disburse a billion dollars to states and Indian tribes for eight years of land use planning.

The big question here is which agency will administer the law—the Department of Natural Resources, the Department of Health and Environmental Sciences, the Environmental Quality Council, the Department of Intergovernmental Relations (Bureau of Planning and Economic Development) or some new agency? Right now, it looks like the Bureau of Planning and Economic Development will get the nod. But does Montana want the future of its land administered by some agency that presently promotes economic growth? In the future, it may be impossible to address conflicting responsibilities.

Whatever path to better land use is taken, one segment will certainly get hurt. Subdivision activity can't be controlled without financially harming the small developer.

"We hear lots of complaints about driving the small guy out of business," Aikin confesses, "and in many ways, he should be driven out of business. This is over his depth if he is going to do it properly. The only way he can make a buck on this is to get in, divide, sell fast and get out. The big outfits are set for the long haul. They do a better job."

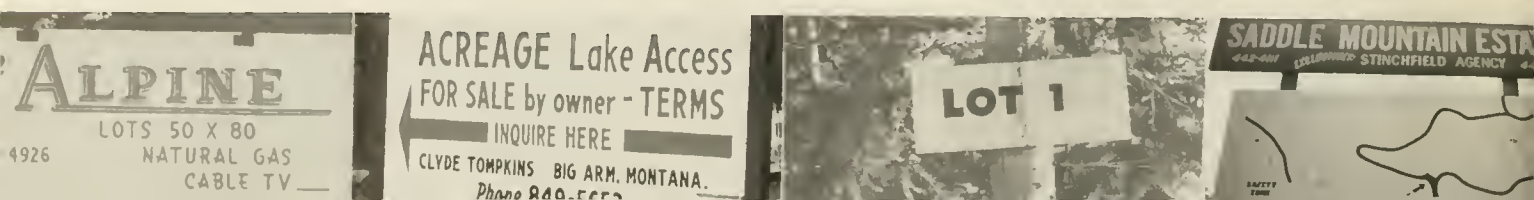
So the future of the small land development business isn't exactly promising in Montana.

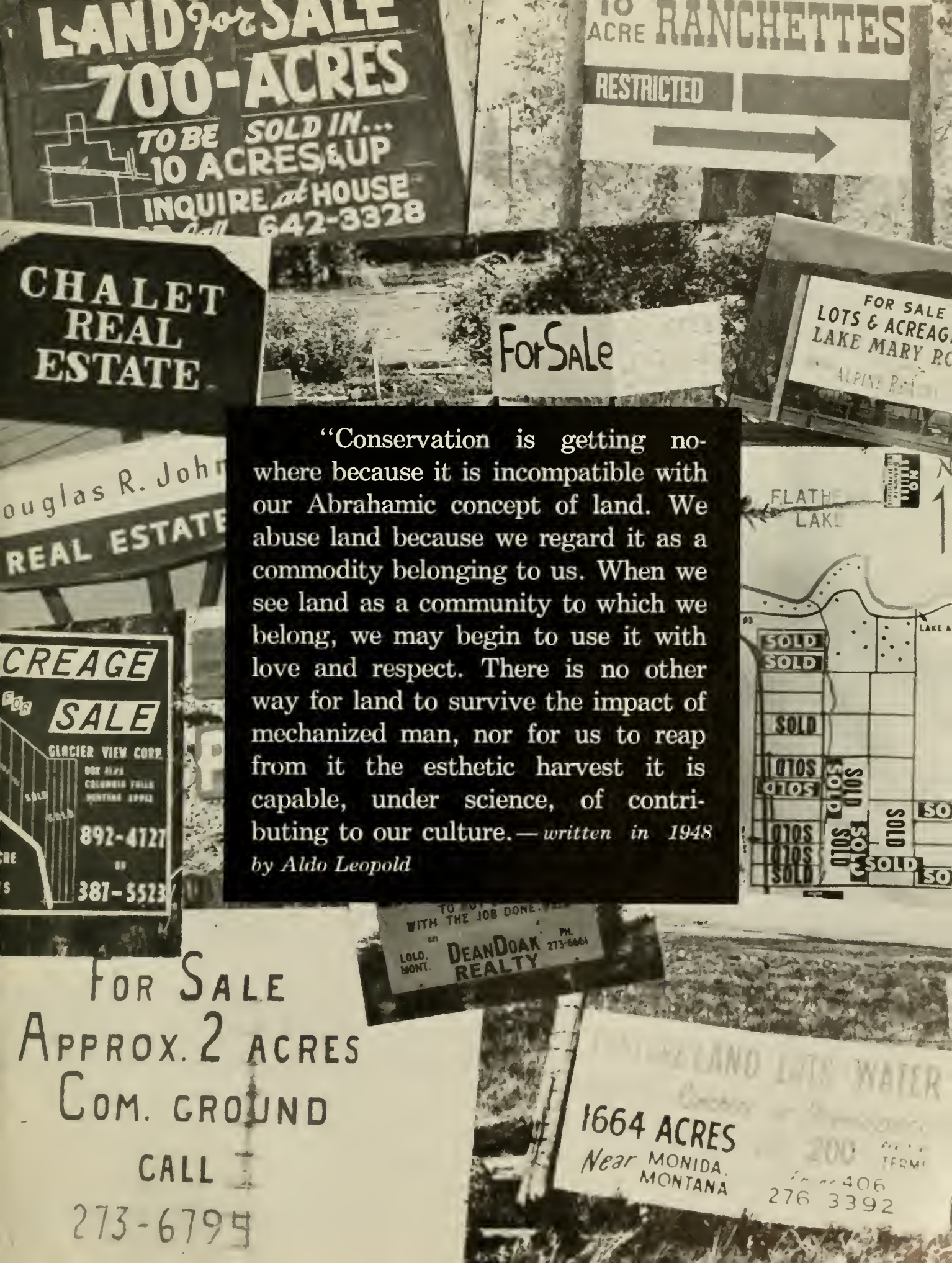
New laws, gubernatorial proclamations, taxes, comprehensive plans, agency responsibility and more all become part of the answer. But where do the priorities lie? Which way should Montana jump? Do we have time to decide?

Perhaps Montana's big problem can best be compared to a small one in Harpswell, Maine. Here, the 2,500 residents suddenly awoke to the 20th century when two large vacation home subdivisions were proposed. Did the townspeople panic to the defense with some last minute (and thus, probably poorly prepared) regulations? No. They acted sensibly and passed an 18-month moratorium on all development. The town wanted time to make sure development proceeded on the correct course.

In Montana, we don't even know what is the correct course. Does Montana also need time to protect its most valuable resource—the land? Is a short-term delay better than a long-term mistake? Does anyone have a better idea?

(Next time, the second part of this article will treat, in detail, four individual subdivisions. We wanted to include this information in this issue, but because of limited space, it was delayed until the March/April 1974 issue.—Ed.)





"Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanized man, nor for us to reap from it the esthetic harvest it is capable, under science, of contributing to our culture. — *written in 1948 by Aldo Leopold*

photo by Danny On

THE GAME BIRD

. . . He clings on the ice with
creepers, talon-sharp.
His sight is keen
As wind which hums with
deep tones of a harp.
He is not seen . . . .

—Mary Owings Miller

NOBODY HUNTS

By Robert Rothweiler

ABOVE TIMBERLINE, WINTER often persists from October to May. The wind blows almost constantly, sweeping snow off exposed slopes and piling it deeply into protected crevasses and corners.

Geographers classify these high mountain areas with long winters and low temperatures as alpine. Few birds can survive such conditions. But the white-tailed ptarmigan is a true alpine bird because it spends the winter as well as summer above timberline.

THE PTARMIGAN'S DOMAIN

Even in summer, the ptarmigan's alpine meadow habitat appears barren. The short, twisted trees testify to the harshness of the weather. Surprisingly, these high meadows support a variety of different plants. Alpine grasses and flowers, like the trees, are low, dense and compact.

When people think of alpine terrain, the most common association is probably the mountain goat. Goats inhabit these rocky slopes and jagged peaks above timberline all year. Other large animals, such as big horn sheep and grizzly bear, spend time at high elevations until winter forces them to range lower.

Most alpine animals are

continued

The ptarmigan changes with the seasons. Photos (top and bottom) by Danny On and (center) Jim Lucke

small and they have had to adapt to survive in adverse weather conditions. Some, such as the chipmunk, golden-mantled squirrel, Columbian ground squirrel and hoary marmot hibernate to get out of the frigid winter weather. Others—such as the pika, pocket gopher, the mouse-like mountain phenacomys, Richardson vole and white-footed deer mouse, winter in tunnels away from the wind and snow.

Also, predators prowl the alpine area. Pine marten, long-tailed and shorttailed weasels and coyote take advantage of the presence of small mammals. While not considered true alpine residents, golden eagles and horned owls soar over the alpine meadows.

THE PTARMIGAN'S ADAPTATIONS

Ptarmigan are a good example of an animal species adapting to their environment. They belong to the grouse family (Tetraonidae). Members of this group resemble chickens; they have feathers over the nostrils, feathered legs and feet and they feed mainly on plant leaves and buds. White-tailed ptarmigan are small and they generally weigh less than one pound.

Ptarmigan are well-known for their seasonal color. During winter, white-tailed ptarmigan are white except for their black bills and eyes. During summer, coloration changes to gray-brown and black, except for the tail, wings and belly, which remain white. During most of the year, feather coloration matches their surroundings so well, they are almost impossible to find.

Ptarmigan seem to know the value of their protective plumage. When threatened, they depend more on camouflage than on the ability to run or fly. If detected, they remain almost motionless and movements are extremely slow. Ptarmigan prefer to escape danger by running. However, when they do fly, they rise from the ground with a noisy whir and harsh cackling sounds. They are strong and rapid fliers and are capable of flying long distances.

Long, hair-like feathers on the ptarmigan's feet are another adaptation which helps them survive their snowy, wintry world. These feathers enable them to walk on soft snow in the winter.

THREE PTARMIGAN SPECIES

Few people have seen ptarmigan, yet they are more numerous and have a wider distribution than any other member of the grouse family. Three species of ptarmigan exist. Willow ptarmigan inhabit arctic and subarctic regions of North America, Europe and Asia. Rock ptarmigan range over arctic and subarctic regions of Alaska and Canada. White-tailed ptarmigan occupy alpine areas of mountain ranges north to Alaska and the

The poem on page 43 first appeared in SATURDAY REVIEW, August 28, 1943. It is used with permission. Copyright © 1943 by Saturday Review Co.

Yukon, east to Continental Divide areas in Montana, Wyoming and Colorado; south to northern New Mexico and west to high elevations in British Columbia, Washington and Oregon.

The range of white-tailed ptarmigan in Montana is limited to high mountains along the Continental Divide in Glacier National Park, the Bob Marshall, Lincoln-Scapegoat, Anaconda-Pintlar and Beartooth-Absaroka wildernesses and the Mission, Swan, Flint Creek and Pioneer mountains.

FOUR SEASONS WITH THE PTARMIGAN

During winter, white-tailed ptarmigan remain in flocks above timberline feeding on dwarf willow and moss. Their food is most accessible on steep cliffs, ridge tops and rocky benches where the wind has blown the snow away. Availability of food depends on snow depth and prevailing winds. When snow covers their food supply, they leave their normal range and descend into timber on the mountainside or into creek bottoms where food and shelter is available. As winter fades, they seek new growths of heath and moss.

The flocks break up in spring. Like other species of grouse in Montana's forested areas, males establish territories. Male ptarmigan have displays associated with courtship of females and defense of territories. Courtship displays include strutting (fanning of the tail and drooping or dragging the wings) and short nuptial flights. Males protect their "piece of ground" by calls and simulated conflict with intruding males. These displays are not as elaborate as those of the blue grouse and ruffed grouse.

Breeding is monogamous and the male usually mates with a single female. Between March and June, a partial molt of head, neck and back feathers occurs. The new feathers are mottled brown, black and gray to match the lichen-covered rocks and disappearing snowdrifts.

Most hen ptarmigan remain with the males for one or two weeks, after which they begin nesting. The female constructs a simple nest and she lays from four to ten eggs. Incubation lasts approximately 21 days. During this time, she will rarely flush from the nest. Most broods hatch before mid-July.

Ptarmigan exhibit strong parental instincts. Male ptarmigan may remain with the newly hatched brood during July and August. Later, they group together in small flocks. They stay in these flocks throughout the summer and into fall. Hens and chicks utilize areas with more luxuriant vegetation while males inhabit areas near snowbanks and rocks. During summer, scattered rocks furnish cover and protection from weather and predators.

Both the male flocks and hens with broods feed on flowers, seeds and leaves of willow, spring beauty and buttercup. Young ptarmigan eat what insects they find.

Young ptarmigan develop fast. Most attempt their first flights when they are about 10 days old. By August, young birds are fully feathered in their first plumage. This plumage is barely complete in late summer when the molt into white winter feathers begins. The fall molt of adults results in complete change to the white winter plumage.

During fall, ptarmigan feed primarily on sedges, grass seedheads, monkey flowers and alpine willow (a shrub found in rocky areas where other vegetation is sparse). At this time of year, ptarmigan seldom frequent mountain meadows unless snow covers the ground. Ptarmigan segregate into male and female flocks in winter.

PROTECTIVE ENVIRONMENT

Among North American game birds, willow and rock ptarmigan are unique because more are taken for food than for recreation. A reason might be that people who live in the range of these two species rely heavily on hunting, trapping and fishing. In recent years, however, sport hunting of ptarmigan has become more popular in northern climates, but inaccessibility of much of the ptarmigan range limits the amount of hunting.

Hunters pursue white-tailed ptarmigan for recreation over much of their range. But in Montana that range is rugged and inaccessible and little recreational hunting exists.

Ptarmigan are classified a game bird in Montana, although the state has not allowed sport hunting since 1931. Hunting information prior to 1931 is not available, but it appears that because of its rugged habitat, hunting for ptarmigan in Montana was never extensive. Even though a few areas exist where ptarmigan could be hunted, no demand has been expressed for hunting seasons in Montana.

Colorado allows ptarmigan sport hunting, but few hunters hunt *just* ptarmigan. Rather, they combine bird hunting with big game hunting at high elevations.

In places like Glacier National Park, more and more people observe and photograph ptarmigan. In a few places, such as the Logan Pass Visitor Center, overuse threatens to damage the fragile alpine habitat of the ptarmigan.

But the ptarmigan is lucky. All over Montana—and other parts of the world—human activities affect the environment of wild animals and birds. In almost all cases, these activities result in reduced numbers of animals and birds. As long as the ptarmigan remains the camouflaged sentinel of high, cold and inaccessible places, it probably won't be threatened by man's encroachment.

ABOUT THE AUTHOR

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